

# KIC 004470124

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
004470124-01	OBS	No	11.459624	140.821050	322.5	17.951	8.5	9.5	1.17	6499	2.40	196.46

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004470124-01	OBS	FP	0.00	1	0	0	0	LPP_DV—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.

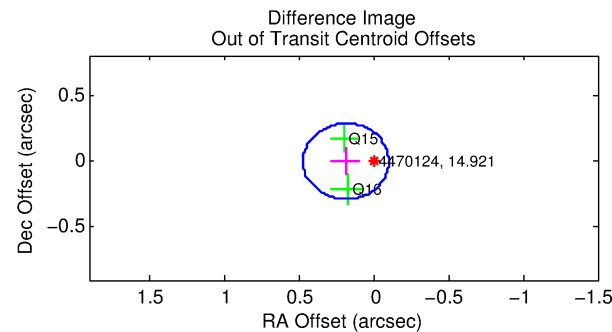
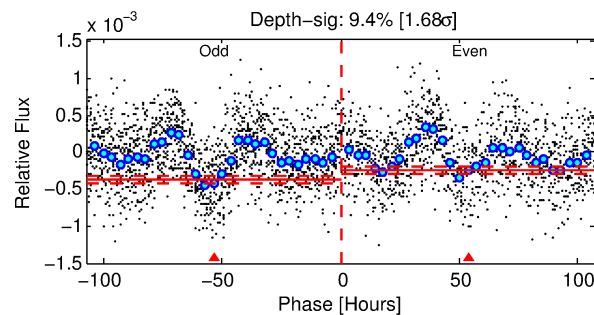
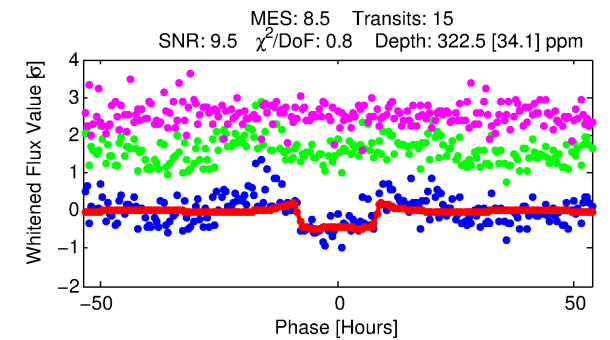
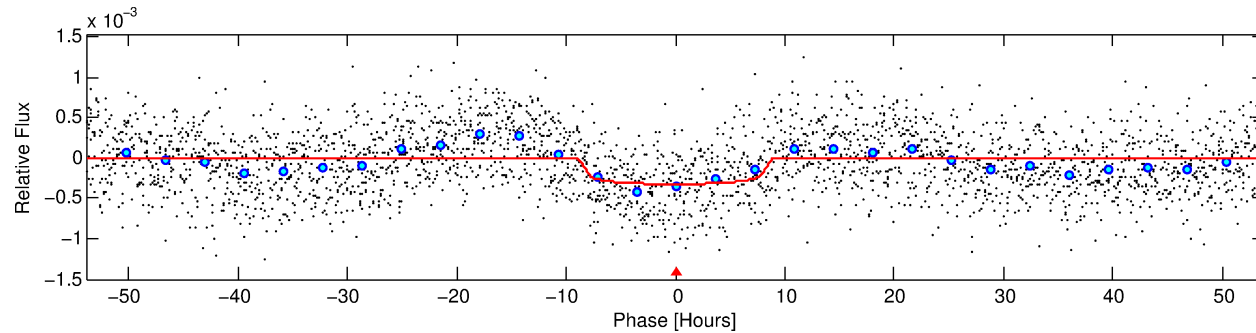
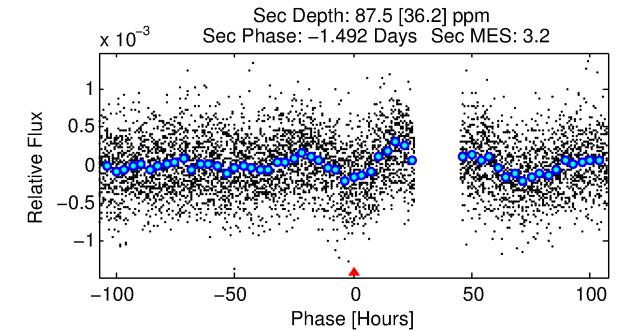
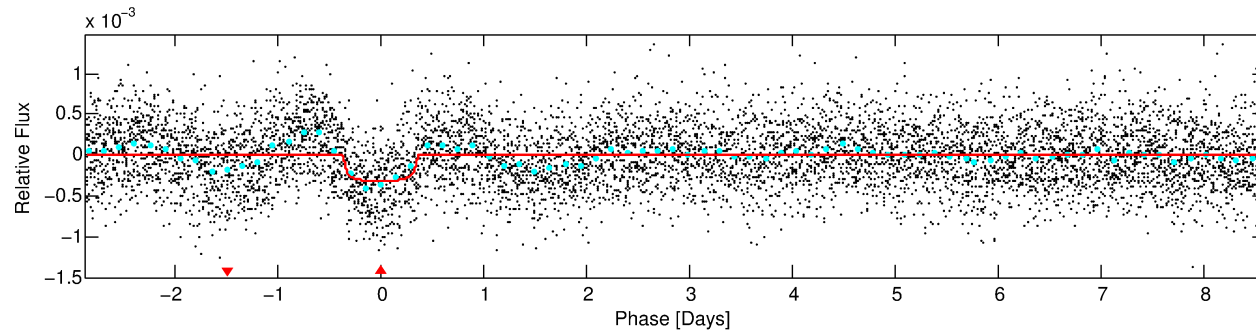
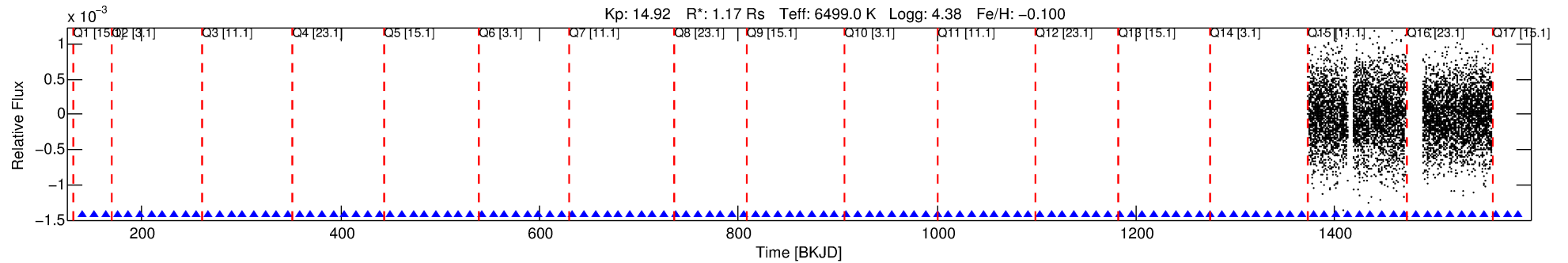
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 004470124-01

No Significant Match Found

# DV One-Page Summary

KIC: 4470124 Candidate: 1 of 1 Period: 11.460 d



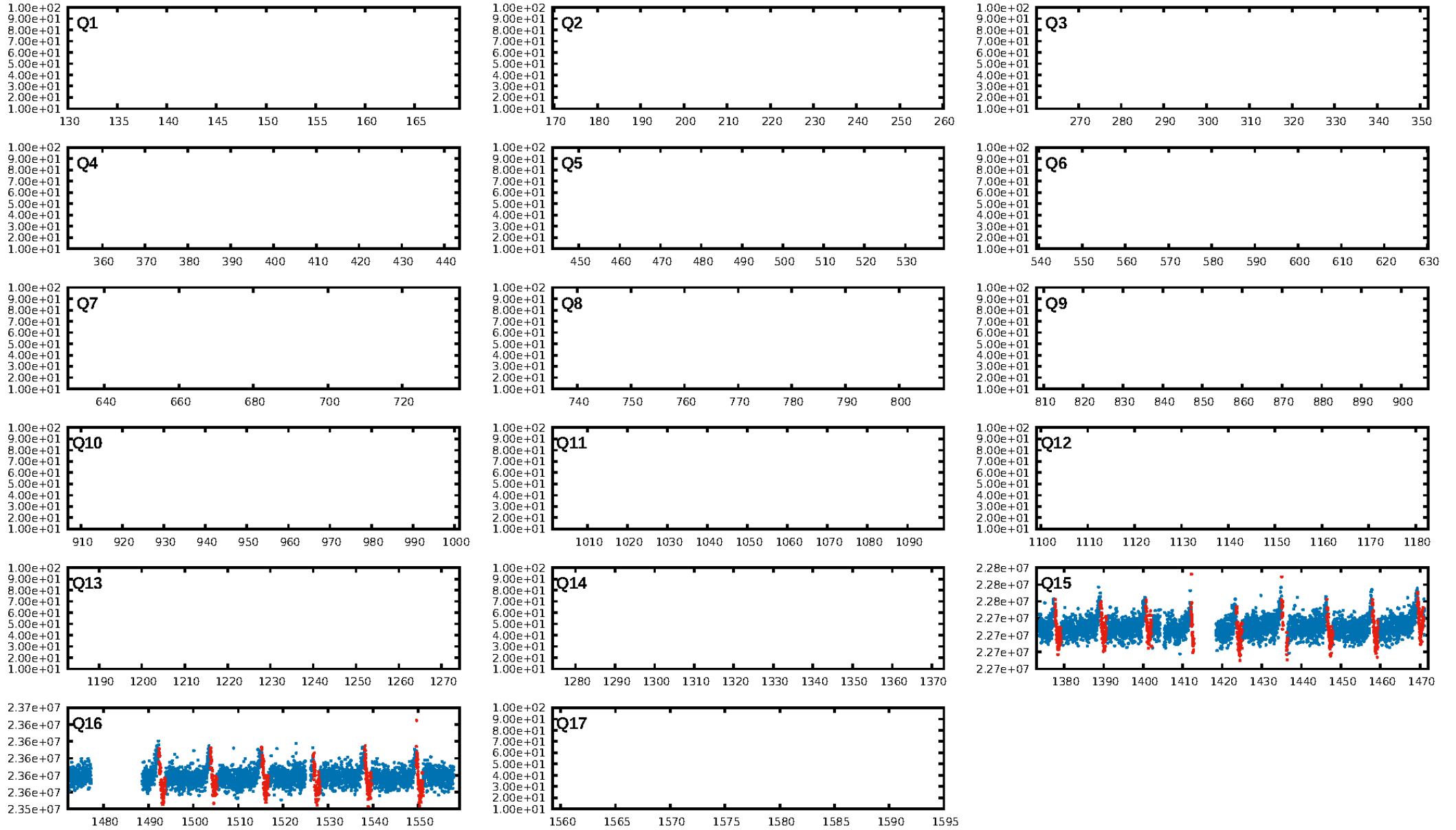
## DV Fit Results:

Period = 11.45962 [0.00102] d  
Epoch = 140.8210 [0.1153] BKJD  
Rp/R\* = 0.0188 [0.0027]  
a/R\* = 2.76 [1.88]  
b = 0.87 [0.22]  
Seff = 196.45 [83.64]  
Teff = 955 [102] K  
Rp = 2.40 [0.91] Re  
a = 0.1054 [0.0299] AU  
Ag = 93.09 [59.78] [1.54 $\sigma$ ]  
Teffp = 4585 [603] K [5.93 $\sigma$ ]

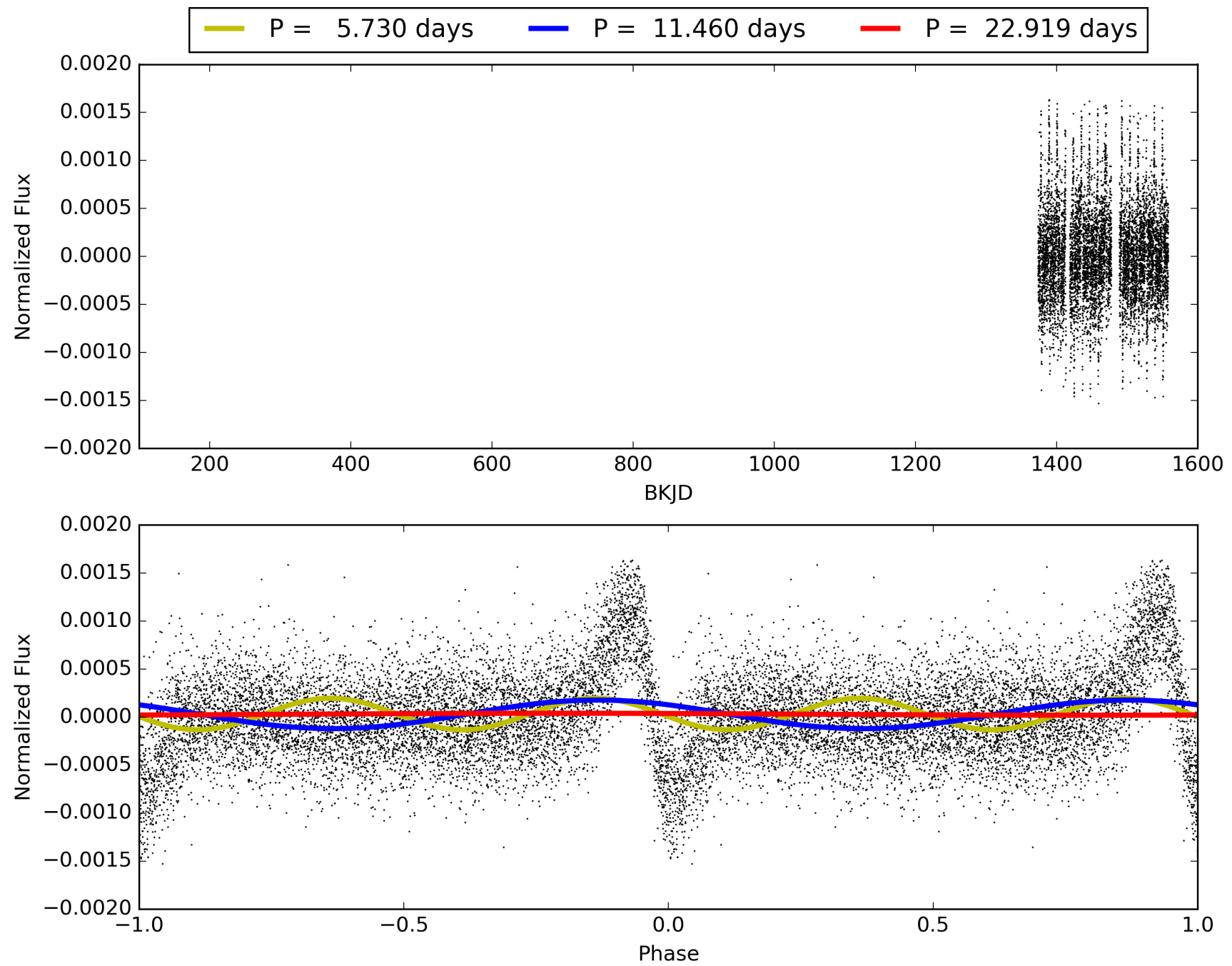
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 86.2%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 9.48e-19  
RollingBand-fgt: 1.00 [15/15]  
GhostDiagnostic-chr: 1.516  
Centroid-sig: 89.0%  
Centroid-so: 0.314 arcsec [0.35 $\sigma$ ]  
OotOffset-rm: 0.184 arcsec [1.93 $\sigma$ ]  
KicOffset-rm: 0.163 arcsec [1.70 $\sigma$ ]  
OotOffset-st: 0/1/1/0 [2]  
KicOffset-st: 0/1/1/0 [2]  
DiffImageQuality-fgm: 1.00 [2/2]  
DiffImageOverlap-fno: 1.00 [2/2]

# TCE 004470124-01, PDC Light Curves

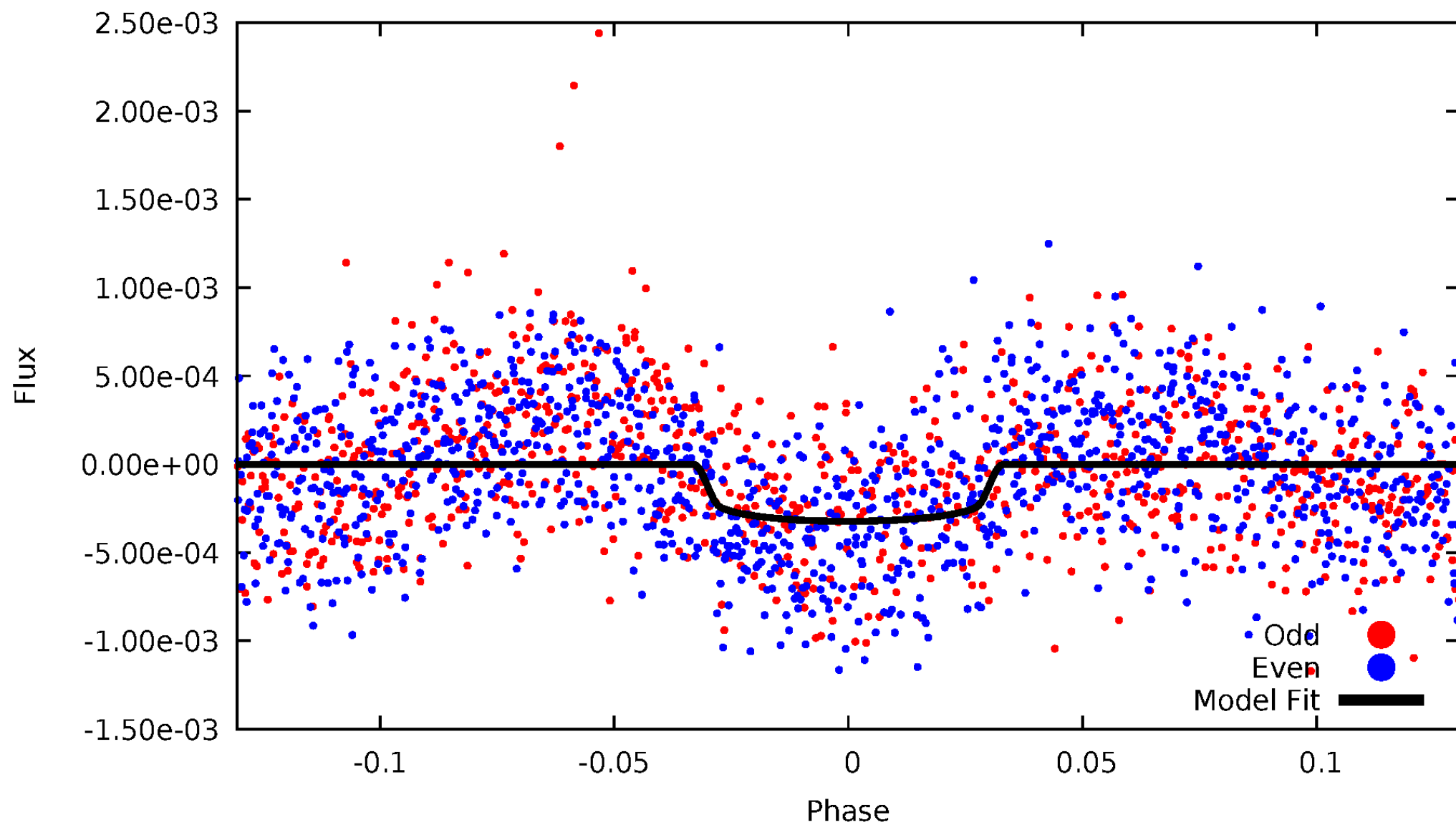


TCE 004470124-01



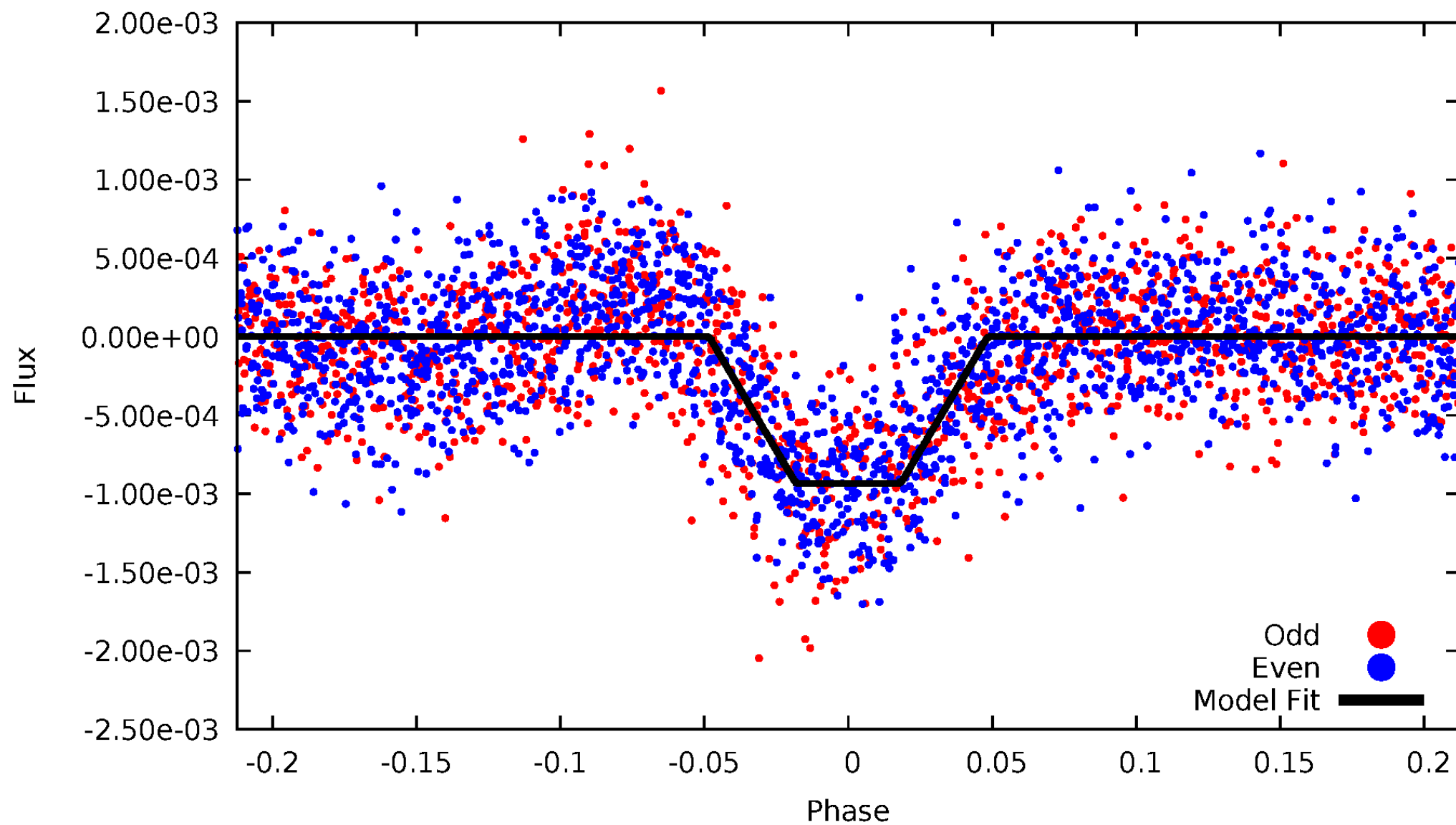
# DV Odd/Even

TCE 004470124-01



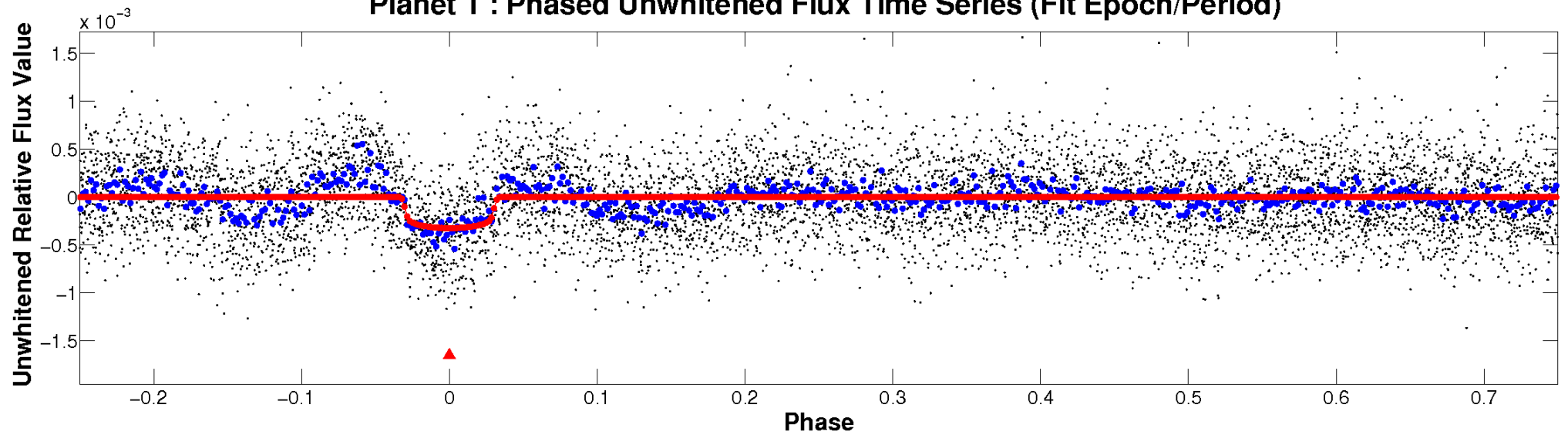
# ALT Odd/Even

TCE 004470124-01

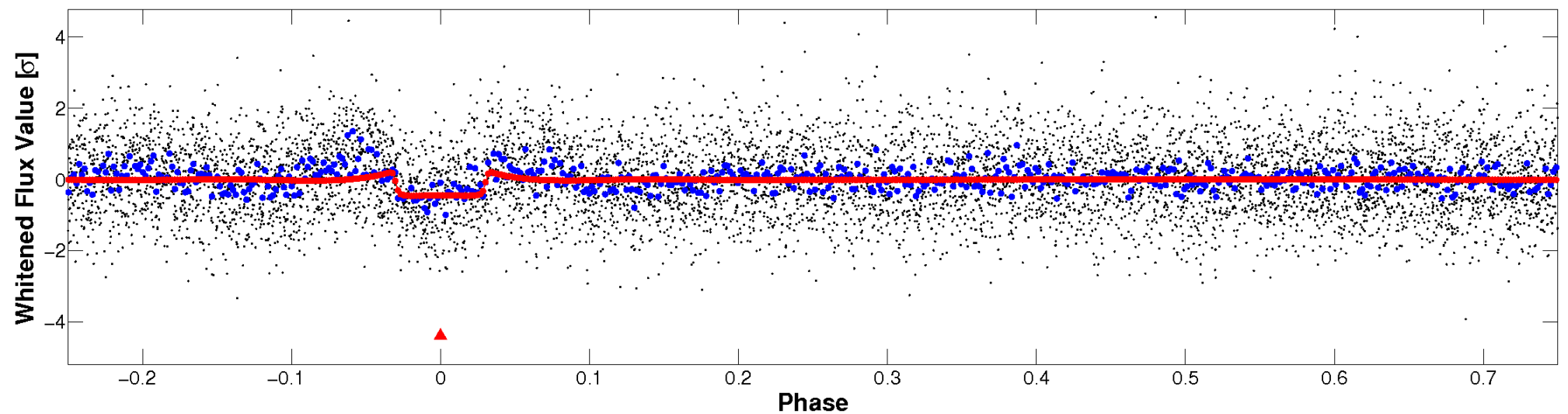


# Non-Whitened Vs. Whitened Light Curve

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

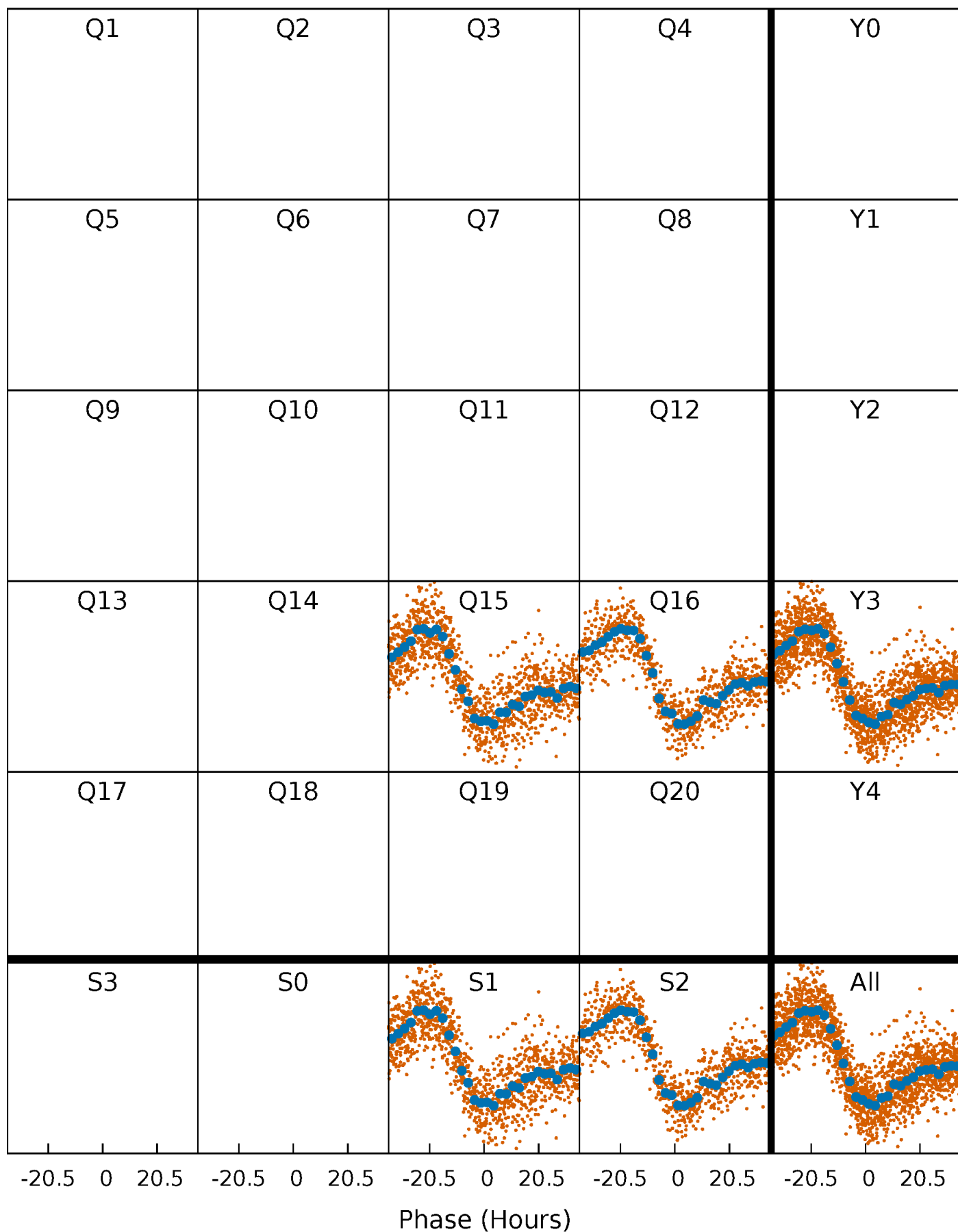


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

TCE 004470124-01 P= 11.459624 Days  $T_0=140.821050$  (BKJD)





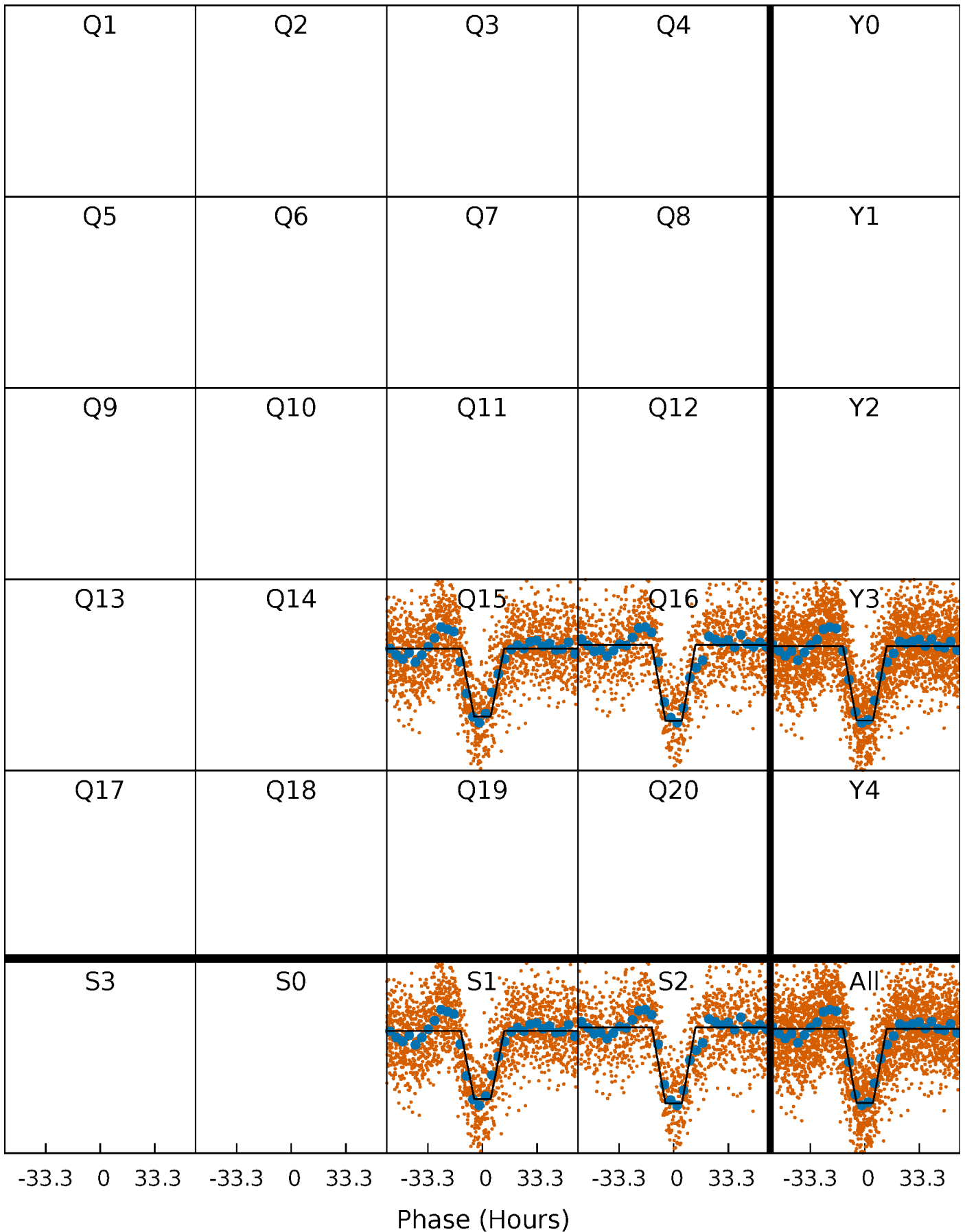
# DV Quarter-Phased Transit Curves

TCE 004470124-01 P= 11.459624 Days  $T_0=140.821050$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

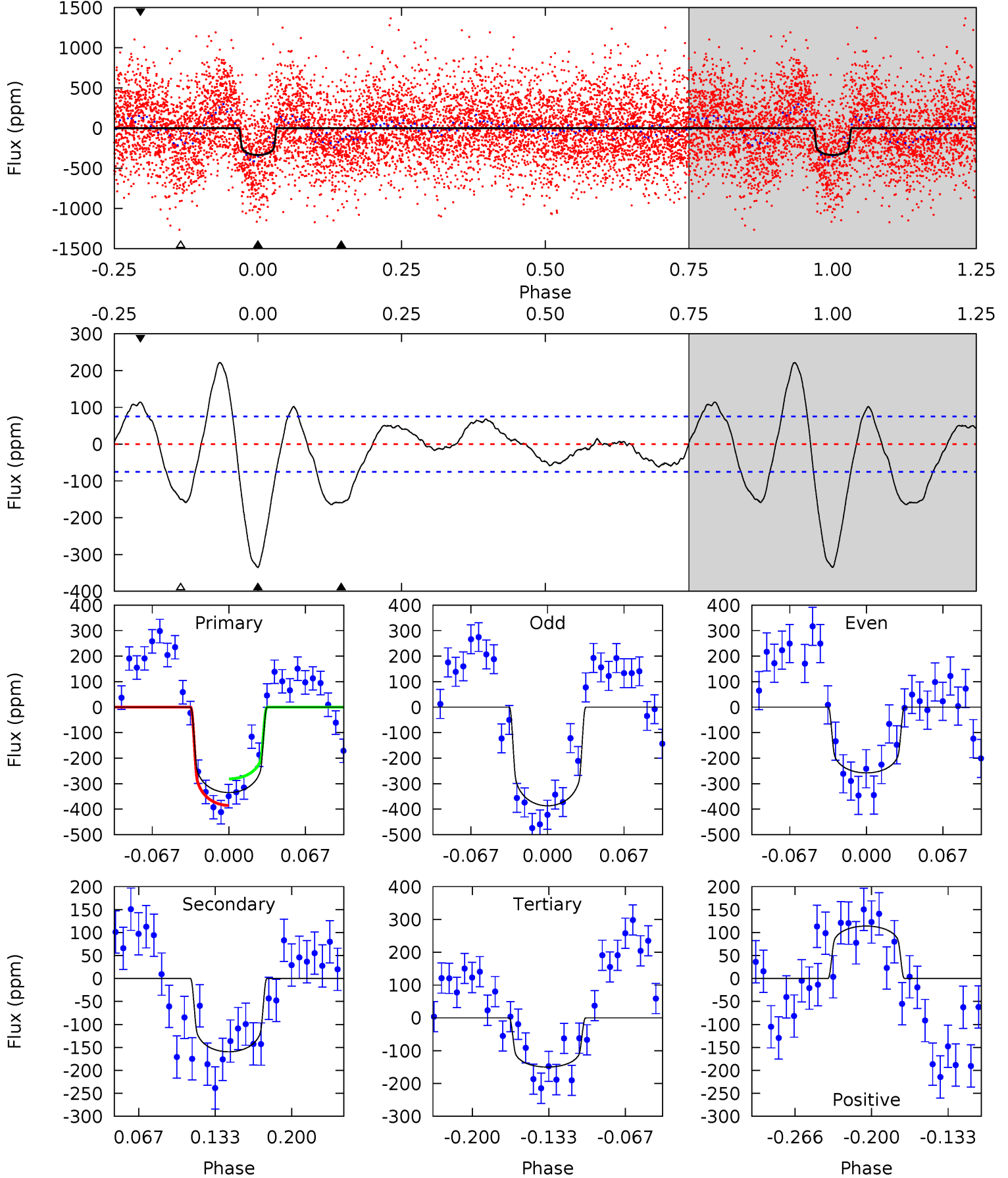
TCE 004470124-01 P= 11.453331 Days  $T_0=141.571188$  (BKJD)



# DV Model-Shift Uniqueness Test

004470124-01, P = 11.459624 Days, E = 140.821050 Days

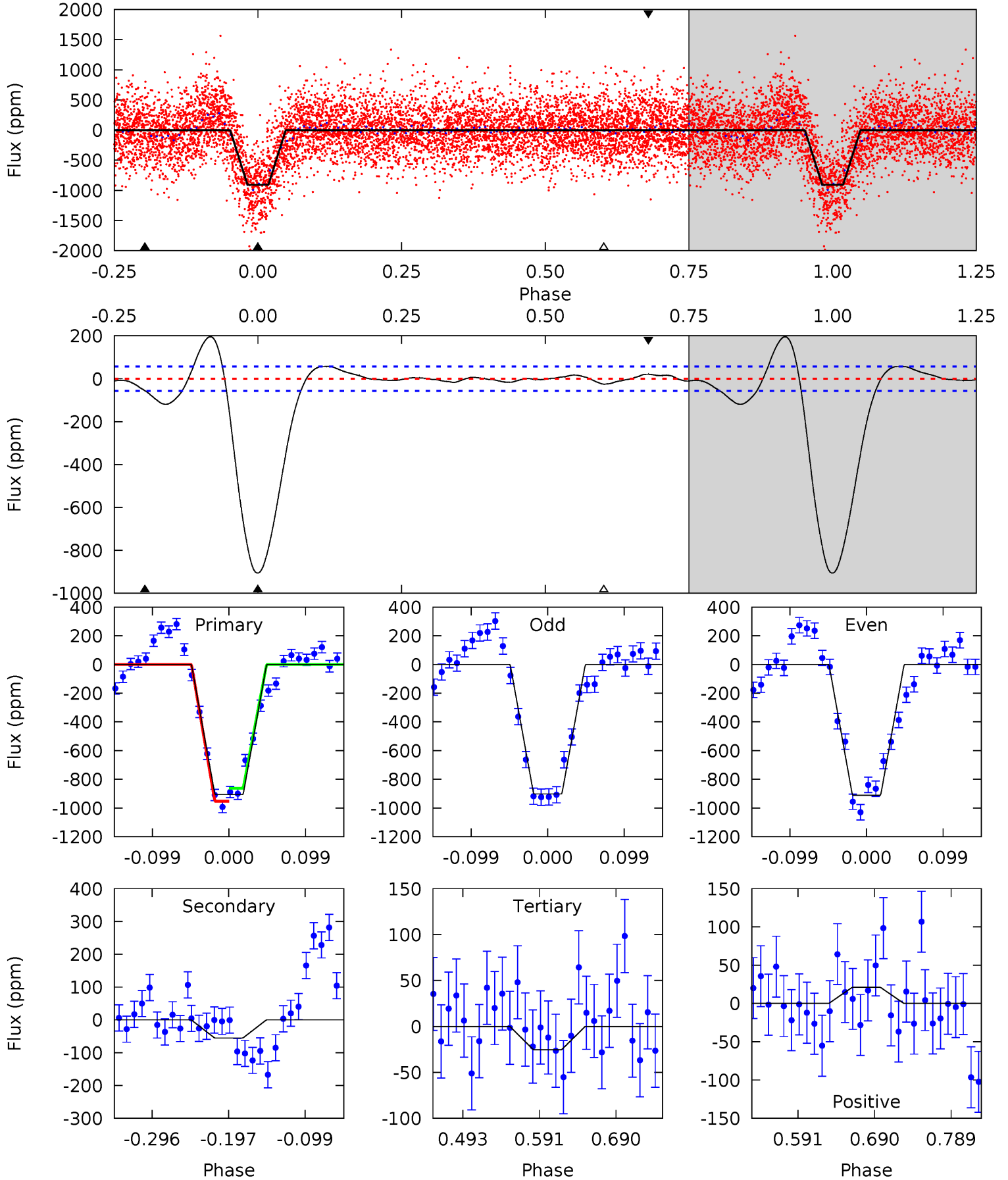
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
20.7	9.85	9.25	7.04	4.65	1.83	3.84	11.4	13.6	0.59	2.81	3.93	0.93	0.40	3.20



# Alt Model-Shift Uniqueness Test

004470124-01, P = 11.453331 Days, E = 141.571188 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
72.7	4.44	2.03	1.69	4.57	1.65	1.41	70.6	71.0	2.41	2.75	0.37	1.13	0.18	3.58



### Stellar Parameters For KIC 004470124

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6499^{+157}_{-246}$	$4.378^{+0.070}_{-0.210}$	$-0.100^{+0.250}_{-0.300}$	$1.169^{+0.409}_{-0.136}$	$1.191^{+0.185}_{-0.169}$	$1.050^{+0.383}_{-0.536}$
	+2%/-4%	+2%/-5%	+250%/-300%	+35%/-12%	+16%/-14%	+36%/-51%
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 004470124-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-160 \pm 16$	$2.49^{+0.54}_{-0.44}$	$1358^{+99}_{-75}$	$5333^{+463}_{-357}$	$152^{+73}_{-48}$
Alt.	$-55 \pm 12$	$4.04^{+0.75}_{-0.56}$	$1354^{+101}_{-73}$	$3609^{+191}_{-193}$	$20^{+8}_{-7}$

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

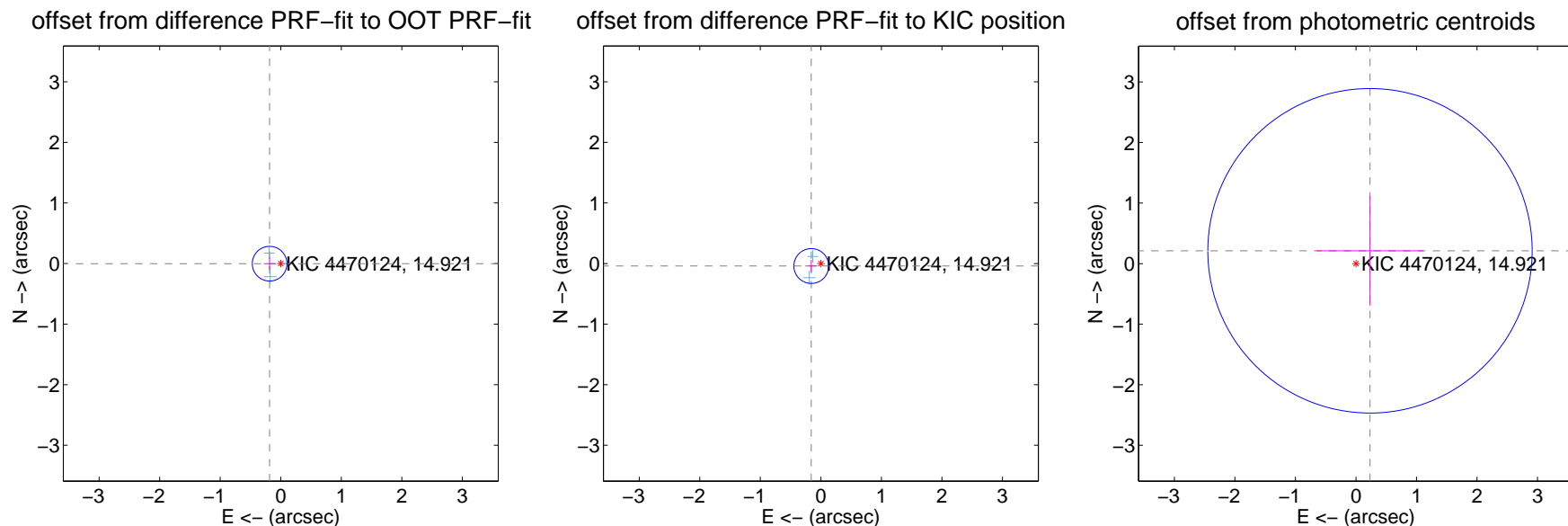
## DV Centroid Data

Supplemental centroid analysis for 004470124-01. Kepler magnitude: 14.92. Transit SNR 9.51

There are 2 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.02 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.184 \pm 0.095$	1.93	$0.184 \pm 0.095$	$-0.002 \pm 0.102$
PRF-fit source offset from KIC position	$0.163 \pm 0.096$	1.70	$0.158 \pm 0.095$	$-0.041 \pm 0.102$
photometric centroid source offset	$0.31 \pm 0.89$	0.35	$-0.23 \pm 0.88$	$0.21 \pm 0.90$



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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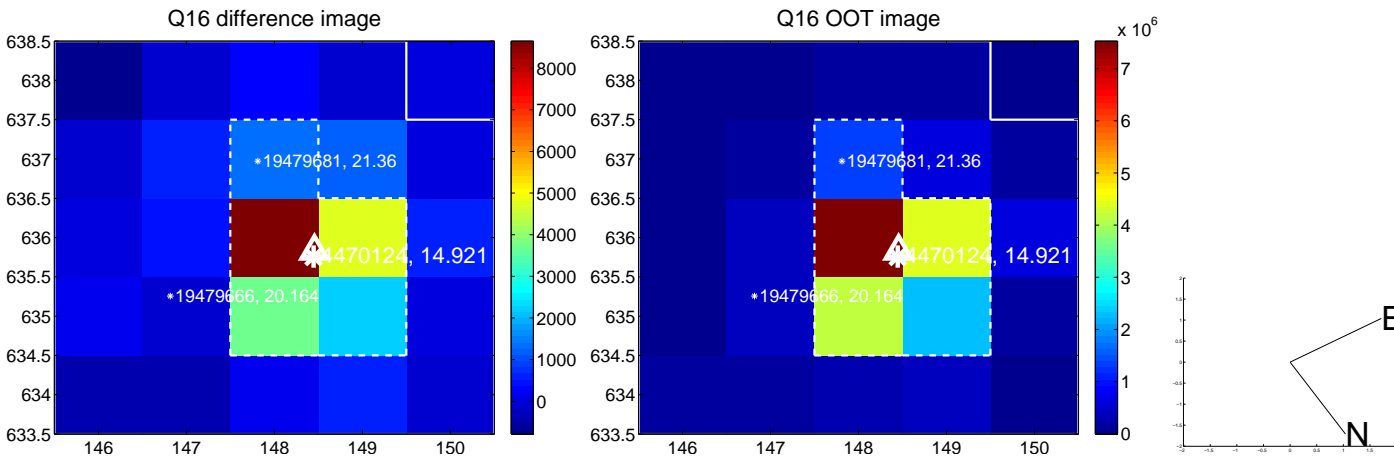
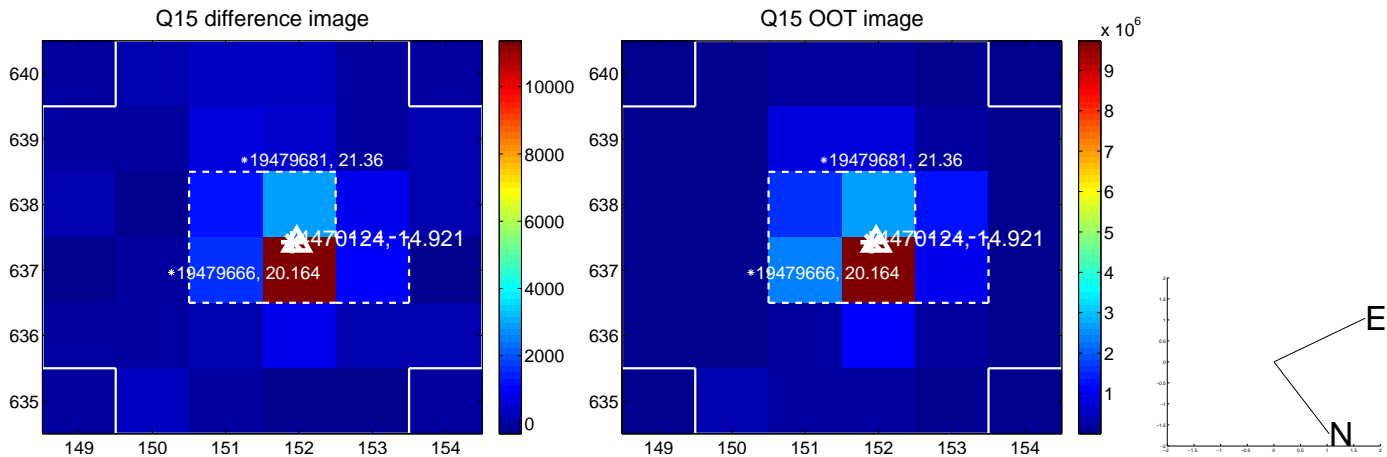
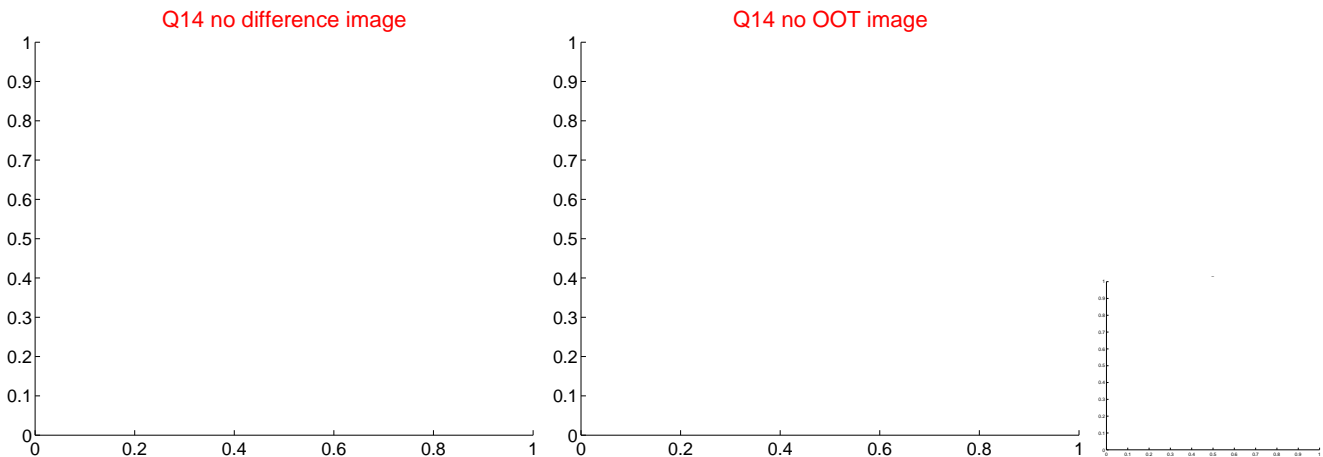




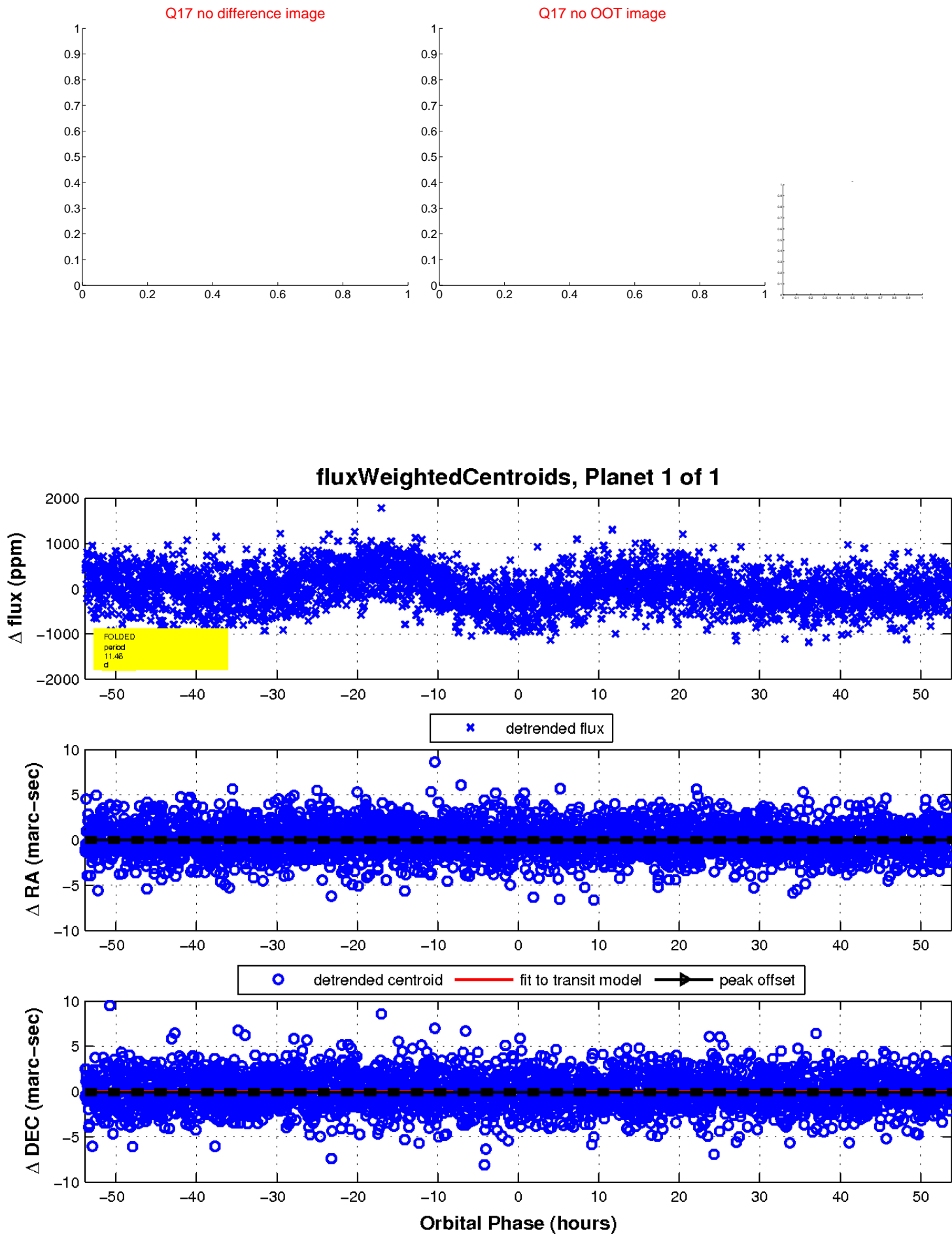
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UKIRT Image

Declination

