

# KIC 007515103

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007515103-01	OBS	No	216.193703	208.849022	197.3	12.723	7.3	5.5	0.92	6086	1.37	2.09

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007515103-01	OBS	FP	0.03	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—MOD_NONUNIQ_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.

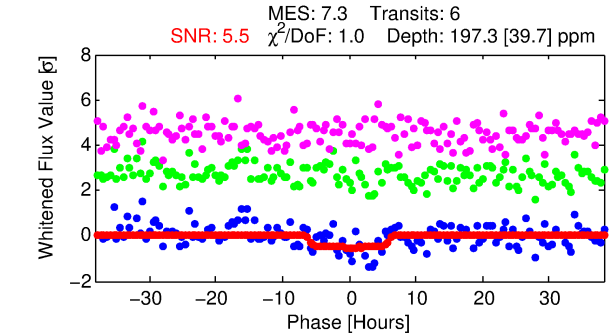
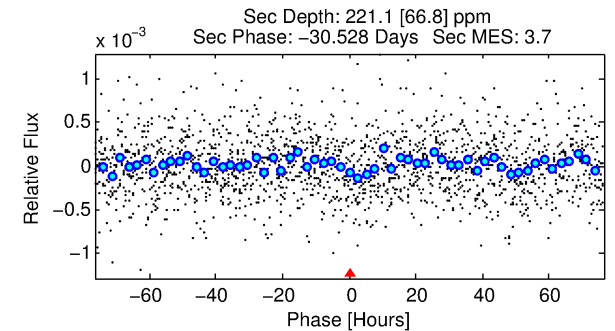
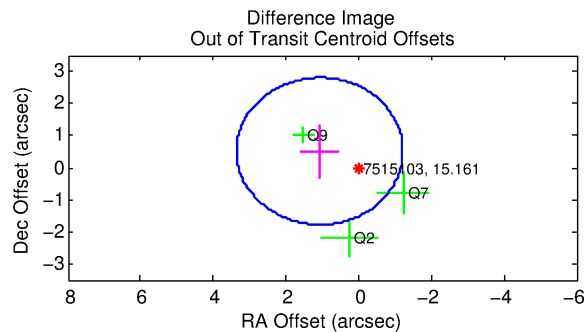
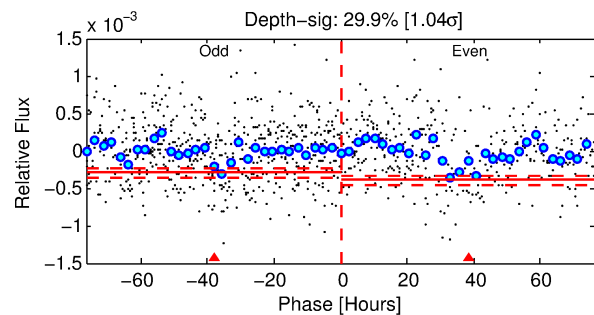
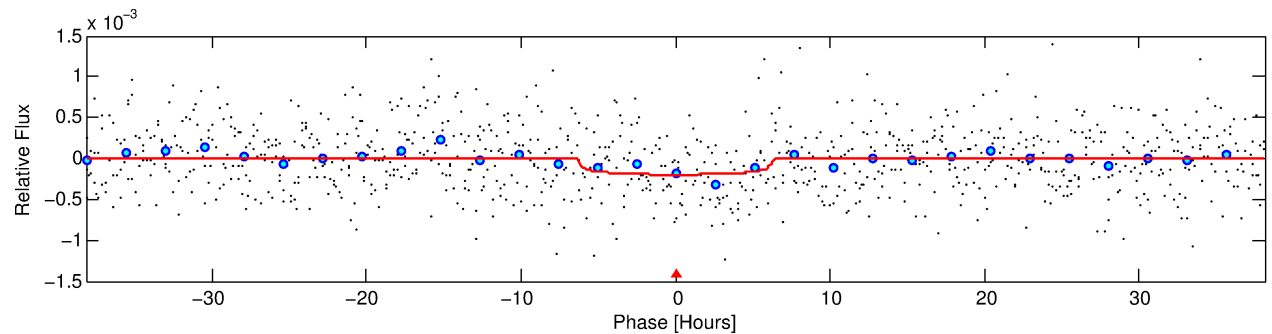
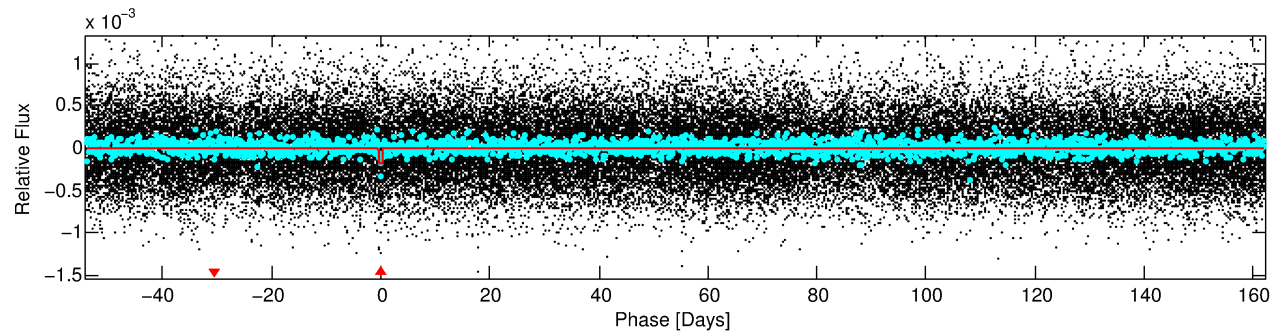
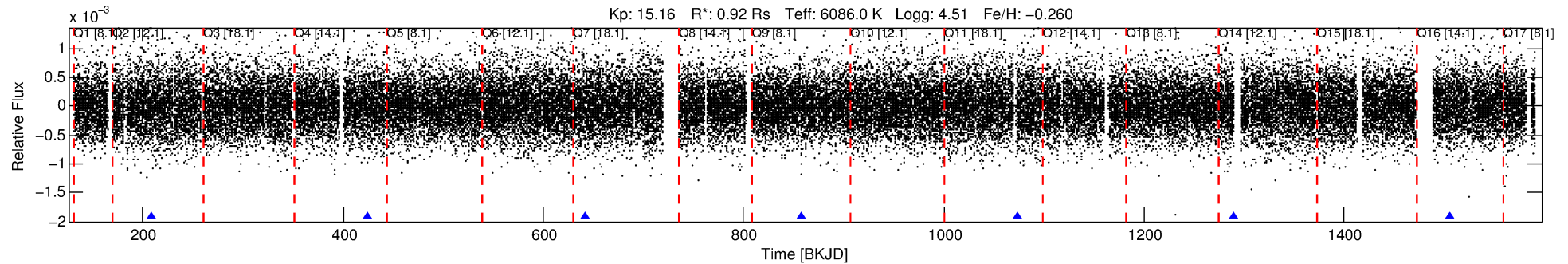
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 007515103-01

No Significant Match Found

# DV One-Page Summary

KIC: 7515103 Candidate: 1 of 1 Period: 216.194 d



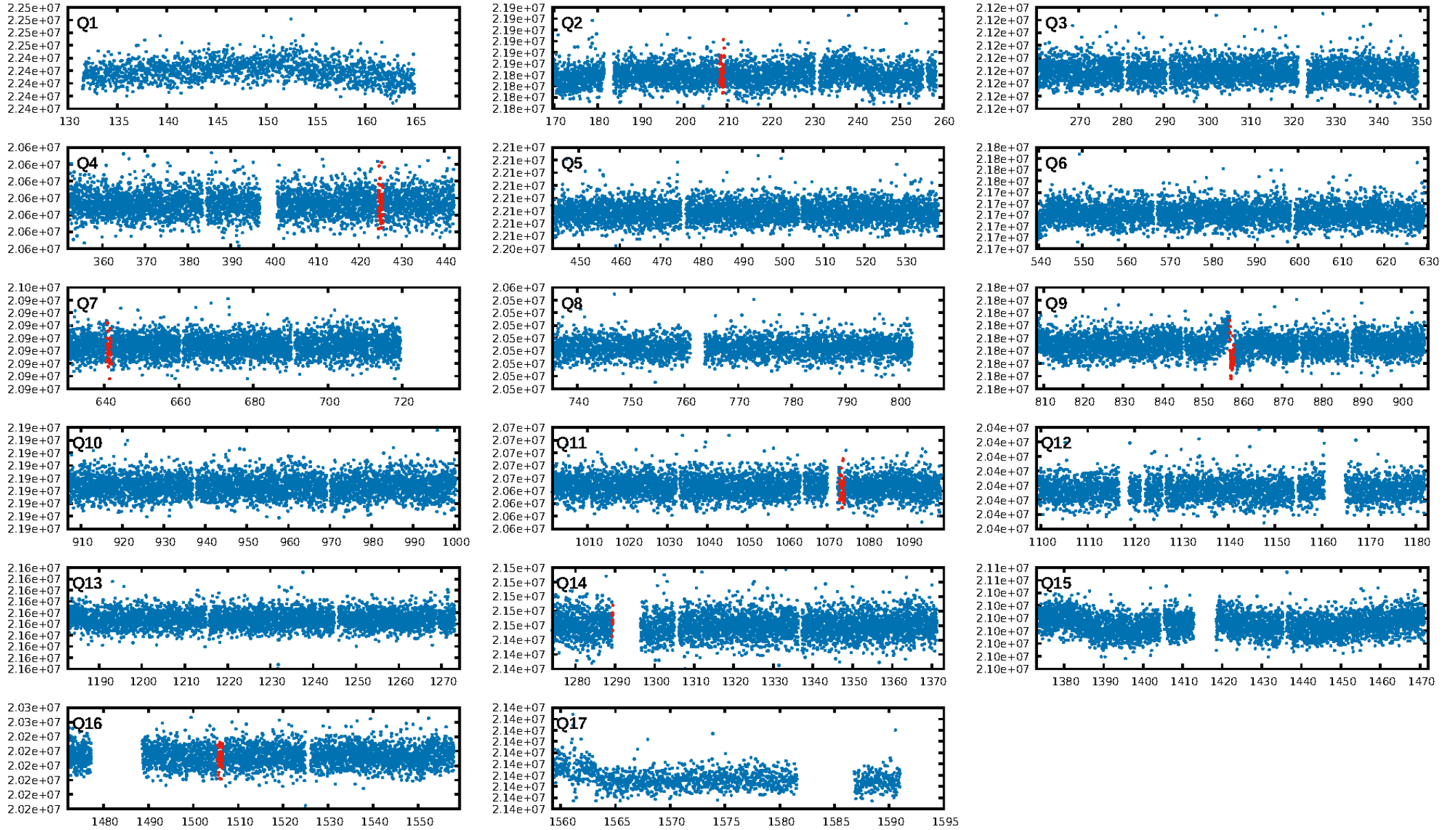
## DV Fit Results:

Period = 216.19370 [0.00996] d  
Epoch = 208.8490 [0.0344] BKJD  
Rp/R\* = 0.0136 [0.0141]  
a/R\* = 100.10 [520.85]  
b = 0.66 [4.51]  
Seff = 2.09 [0.87]  
Teff = 307 [32] K  
Rp = 1.37 [1.48] Re  
a = 0.7059 [0.1884] AU  
Ag = 32397.88 [68975.22] [0.47 $\sigma$ ]  
Teffp = 6361 [3334] K [1.82 $\sigma$ ]

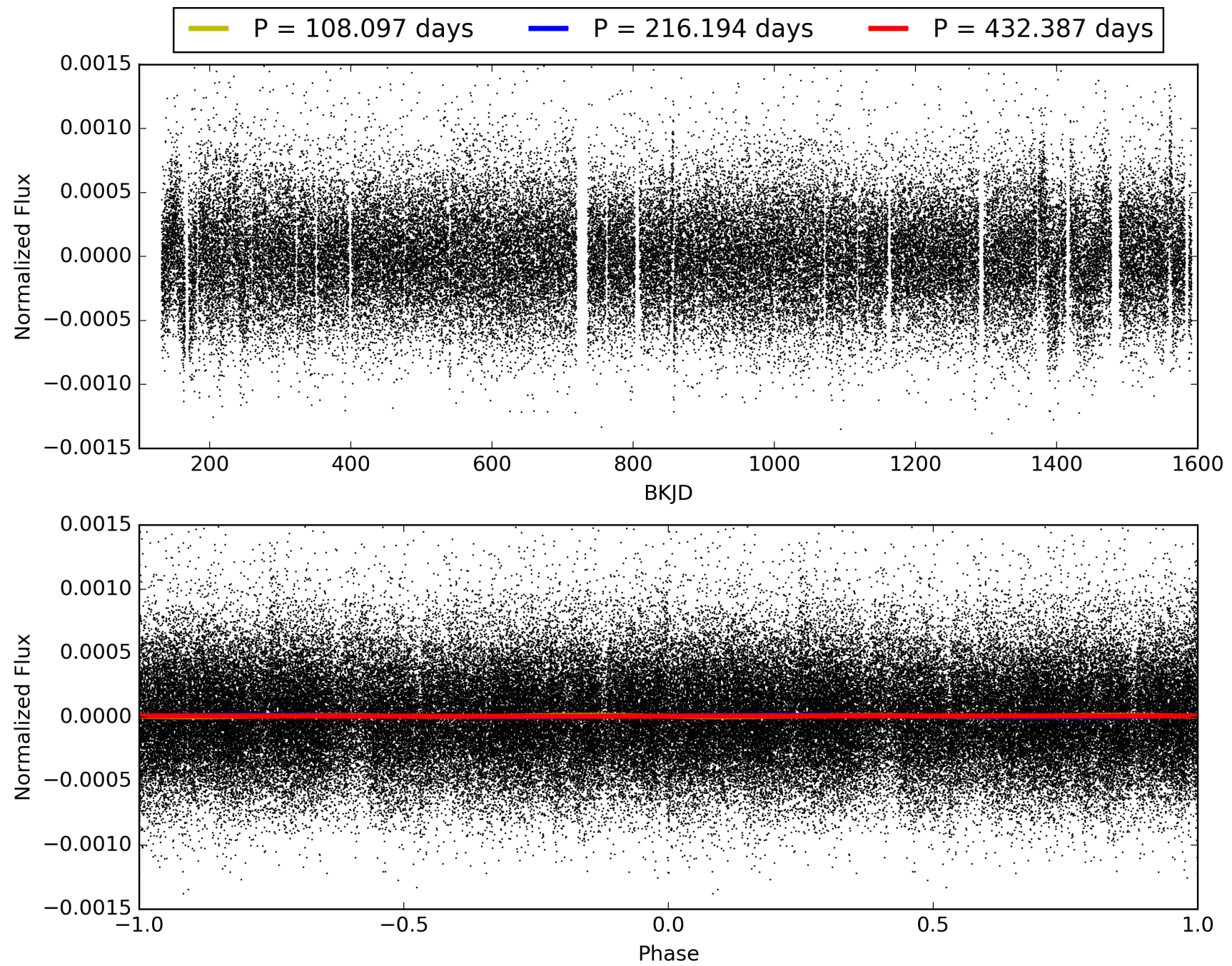
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 0.0%  
ModelChiSquareGof-sig: 99.4%  
Bootstrap-pfa: 4.76e-13  
RollingBand-fgt: 1.00 [6/6]  
GhostDiagnostic-chr: -471.8  
Centroid-sig: 27.0%  
Centroid-so: 2.577 arcsec [1.00 $\sigma$ ]  
OotOffset-rm: 1.193 arcsec [1.56 $\sigma$ ]  
KicOffset-rm: 1.323 arcsec [1.62 $\sigma$ ]  
OotOffset-st: 1/1/0/1 [3]  
KicOffset-st: 1/1/0/1 [3]  
DiffImageQuality-fgm: 0.67 [2/3]  
DiffImageOverlap-fno: 1.00 [4/4]

# TCE 007515103-01, PDC Light Curves

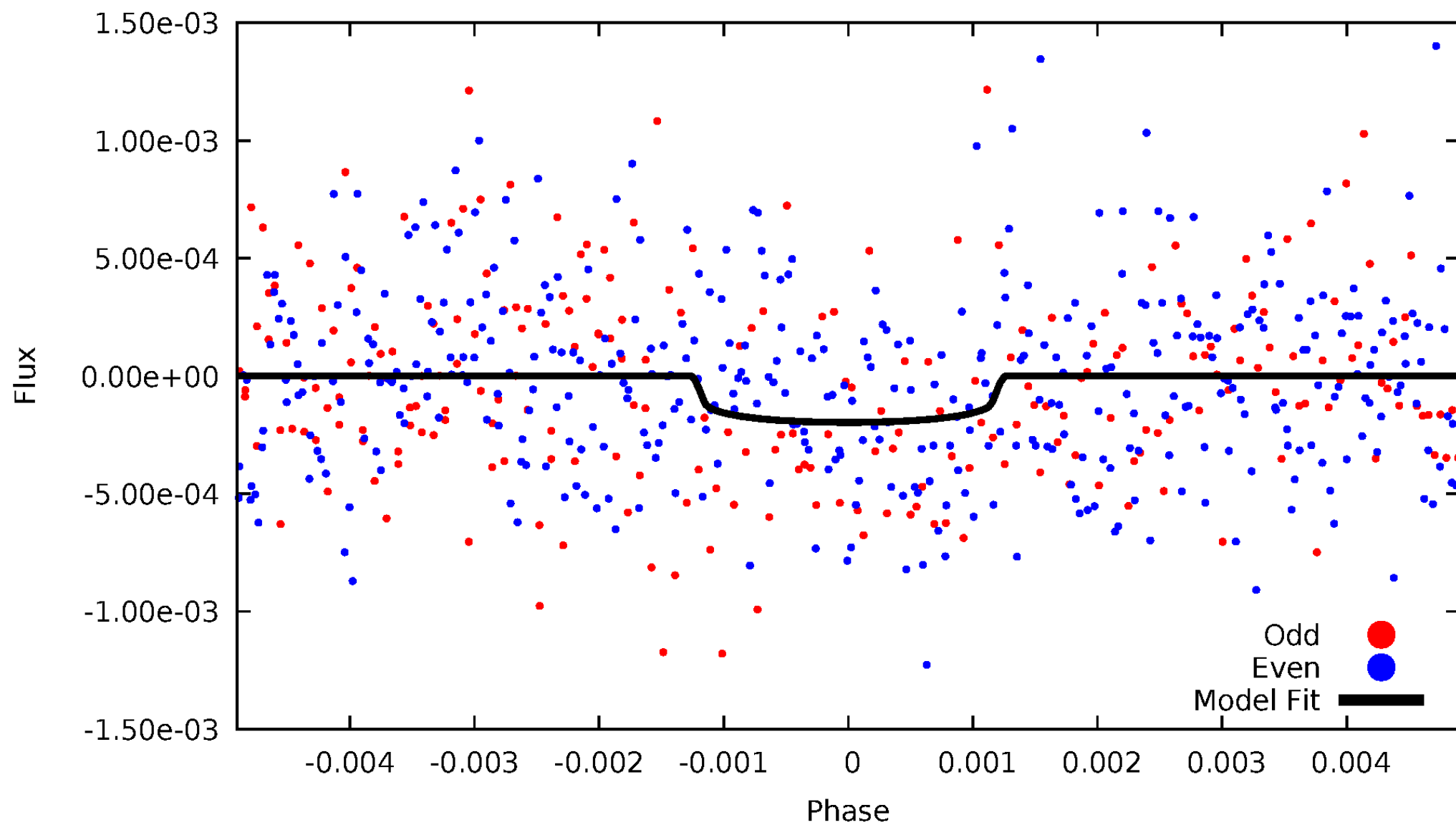


# TCE 007515103-01



# DV Odd/Even

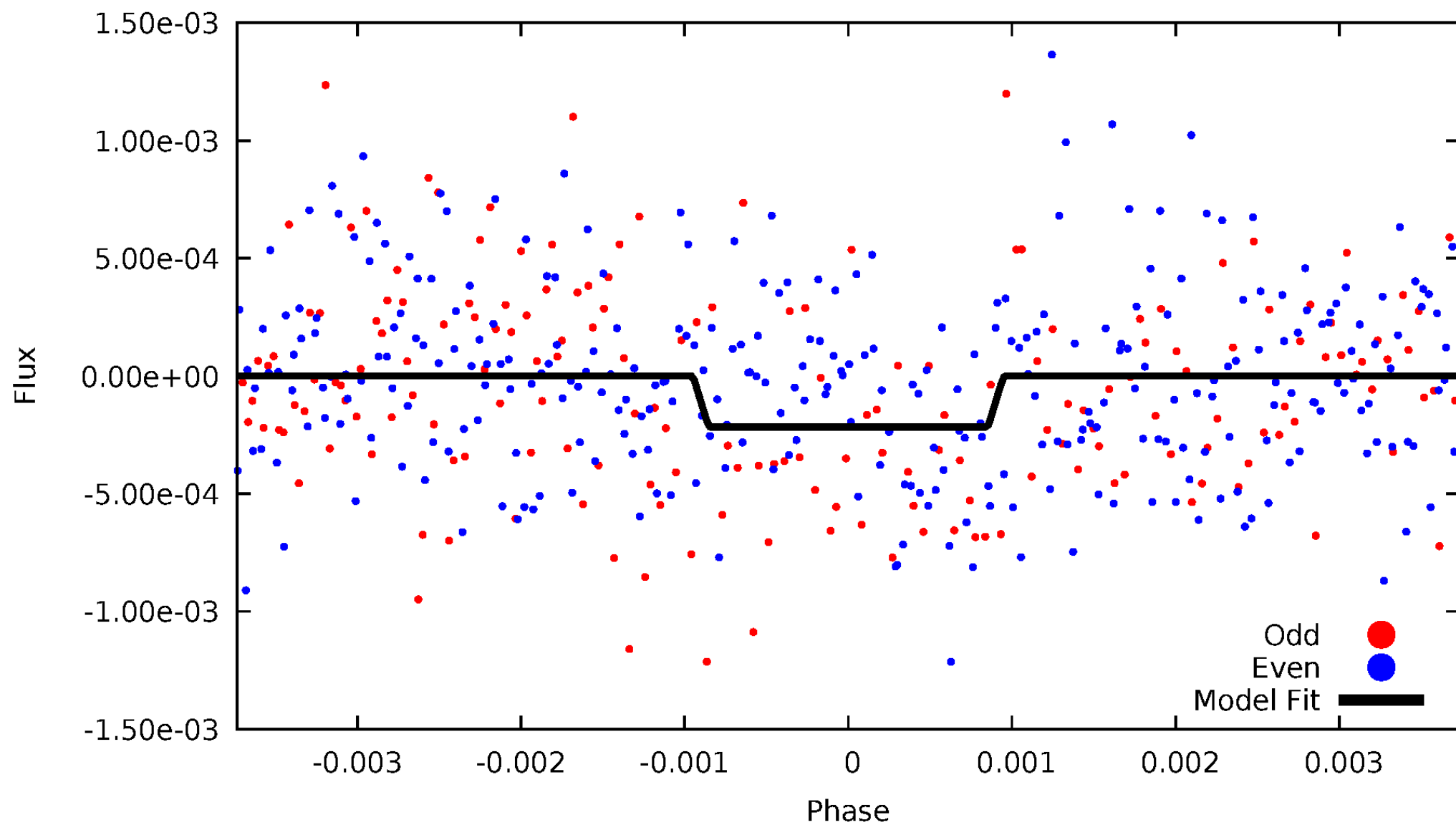
TCE 007515103-01





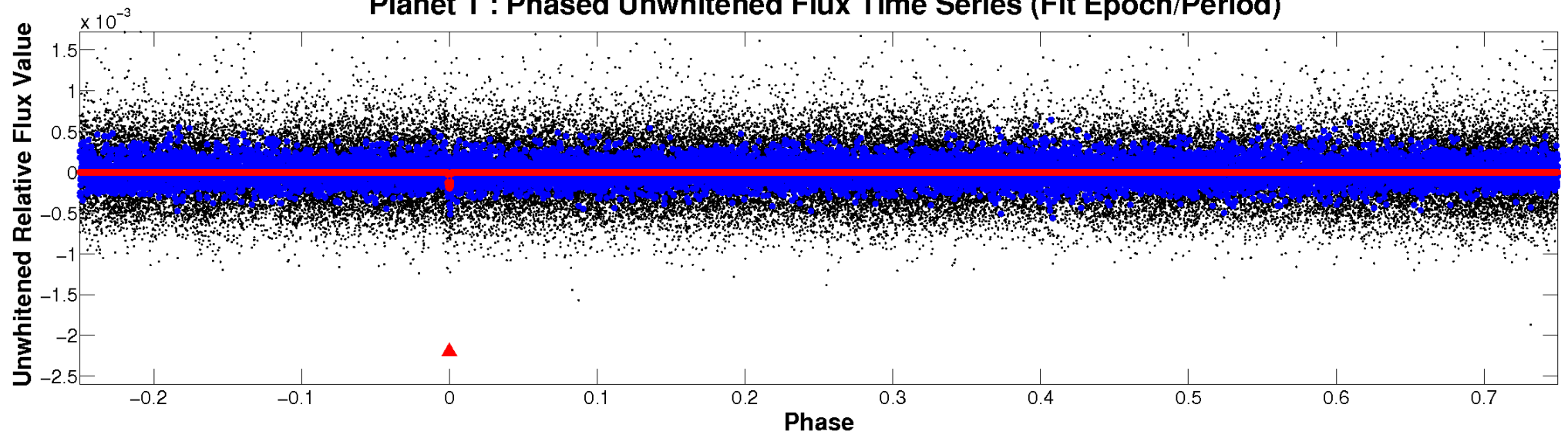
# ALT Odd/Even

TCE 007515103-01

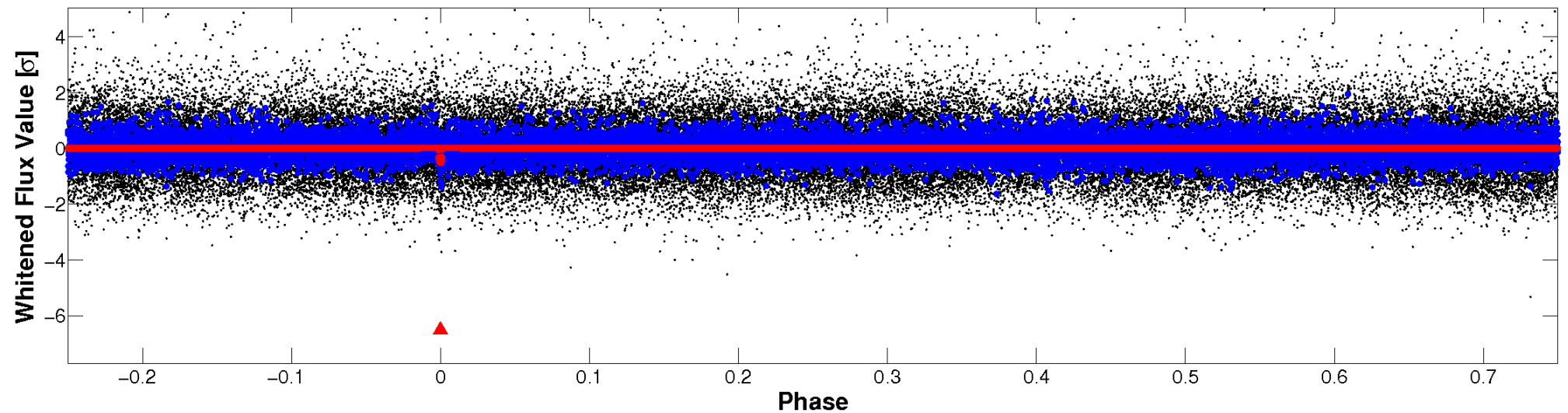


# Non-Whitened Vs. Whitened Light Curve

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

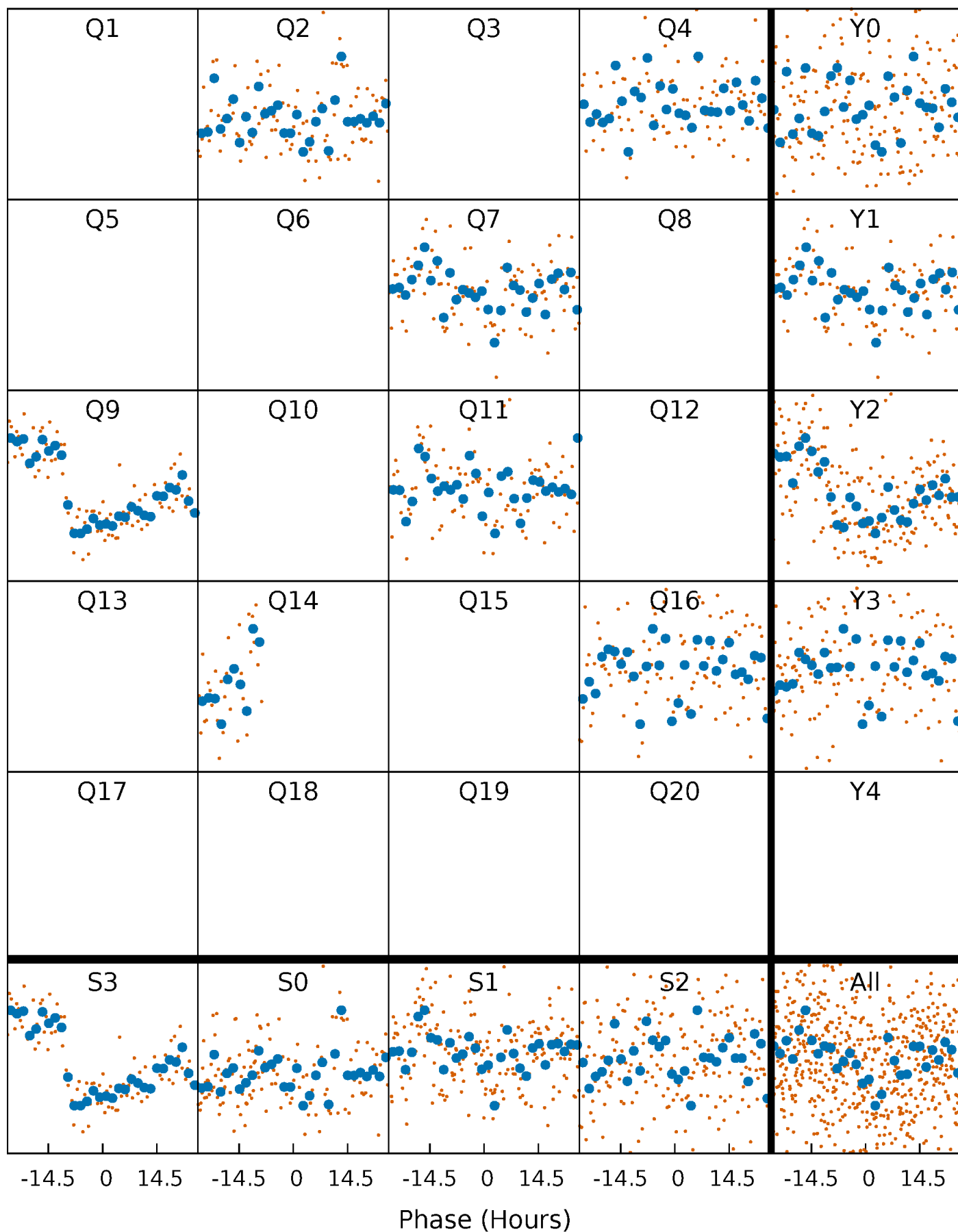


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

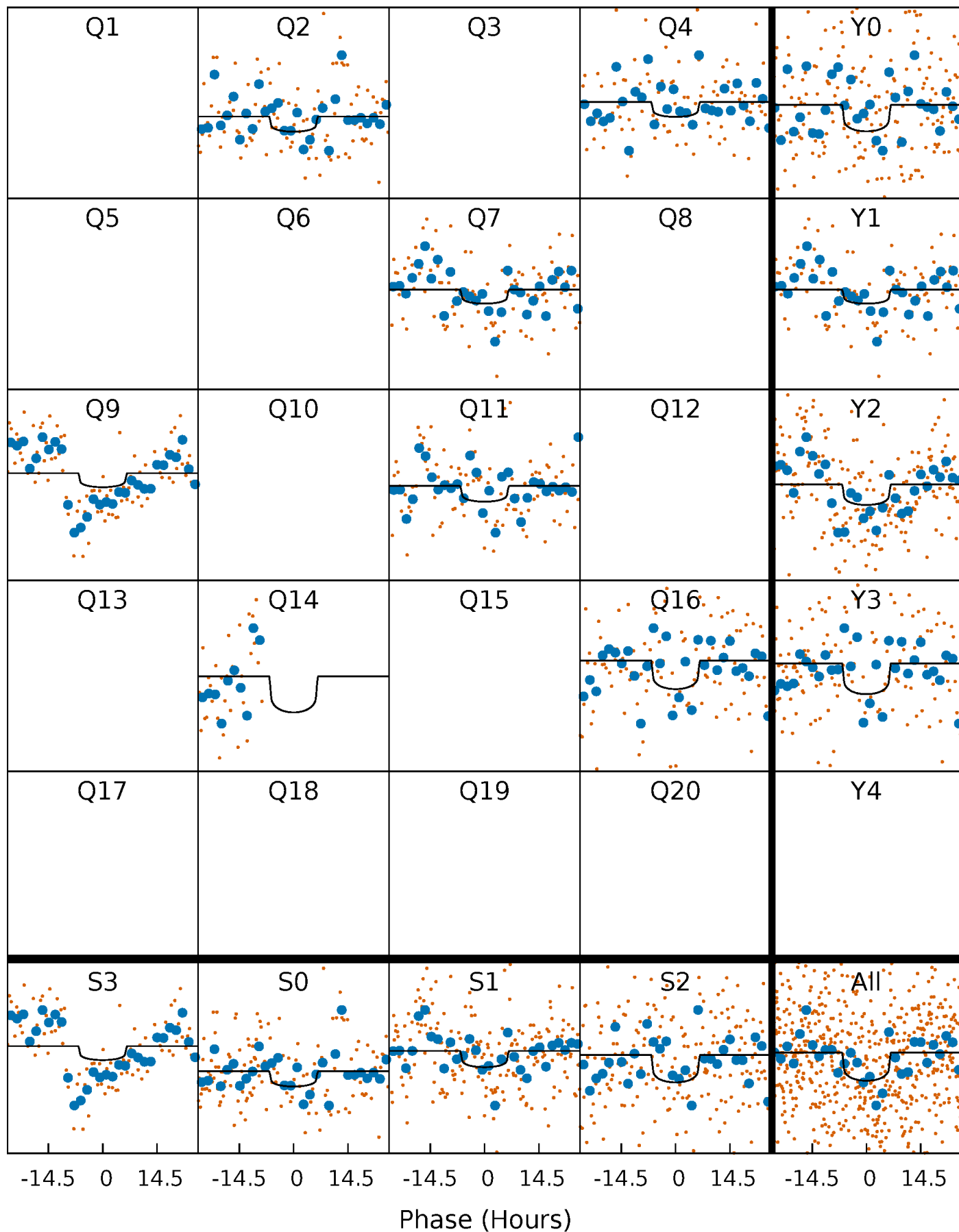
TCE 007515103-01 P=216.193703 Days  $T_0=208.849022$  (BKJD)





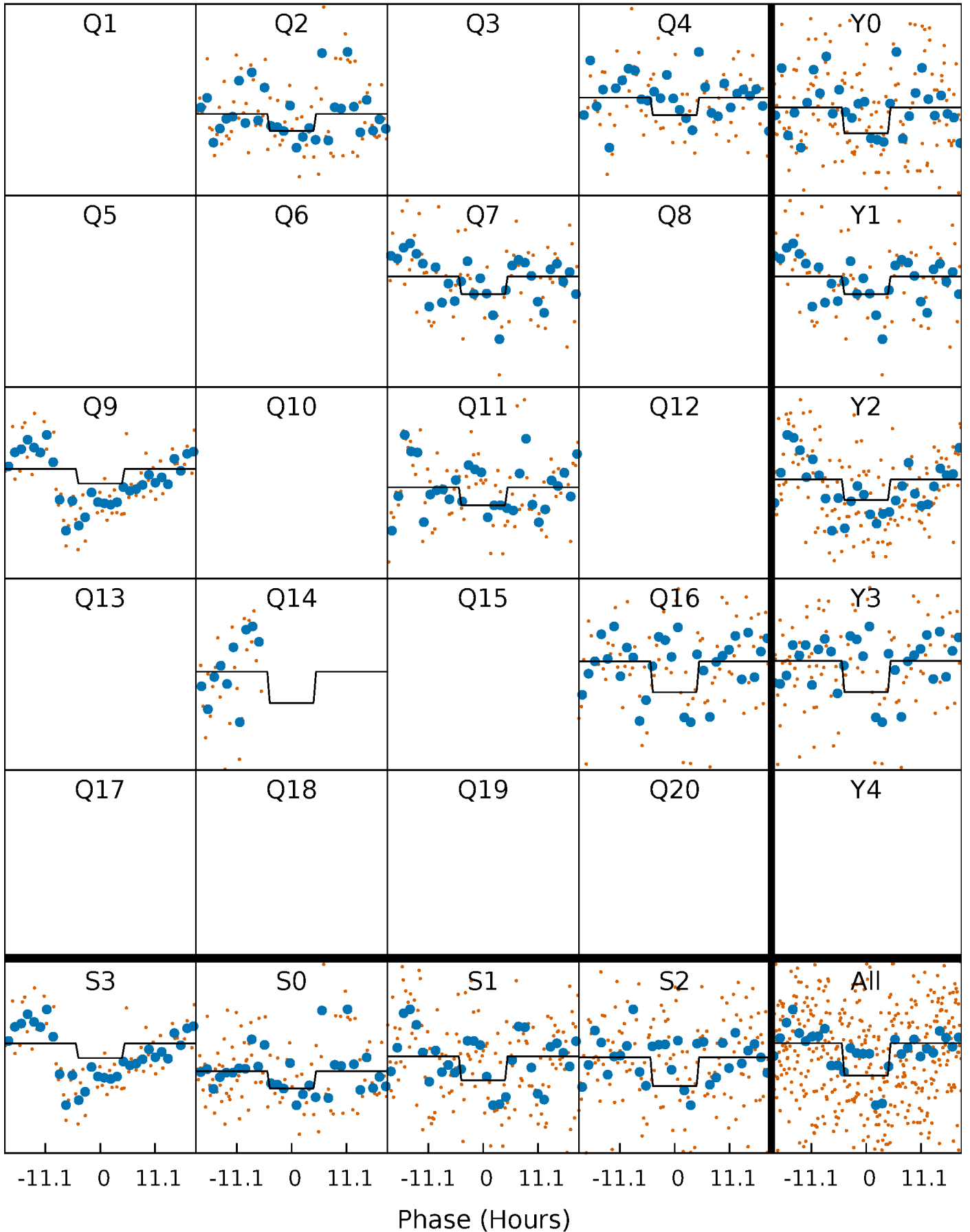
# DV Quarter-Phased Transit Curves

TCE 007515103-01 P=216.193703 Days  $T_0=208.849022$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

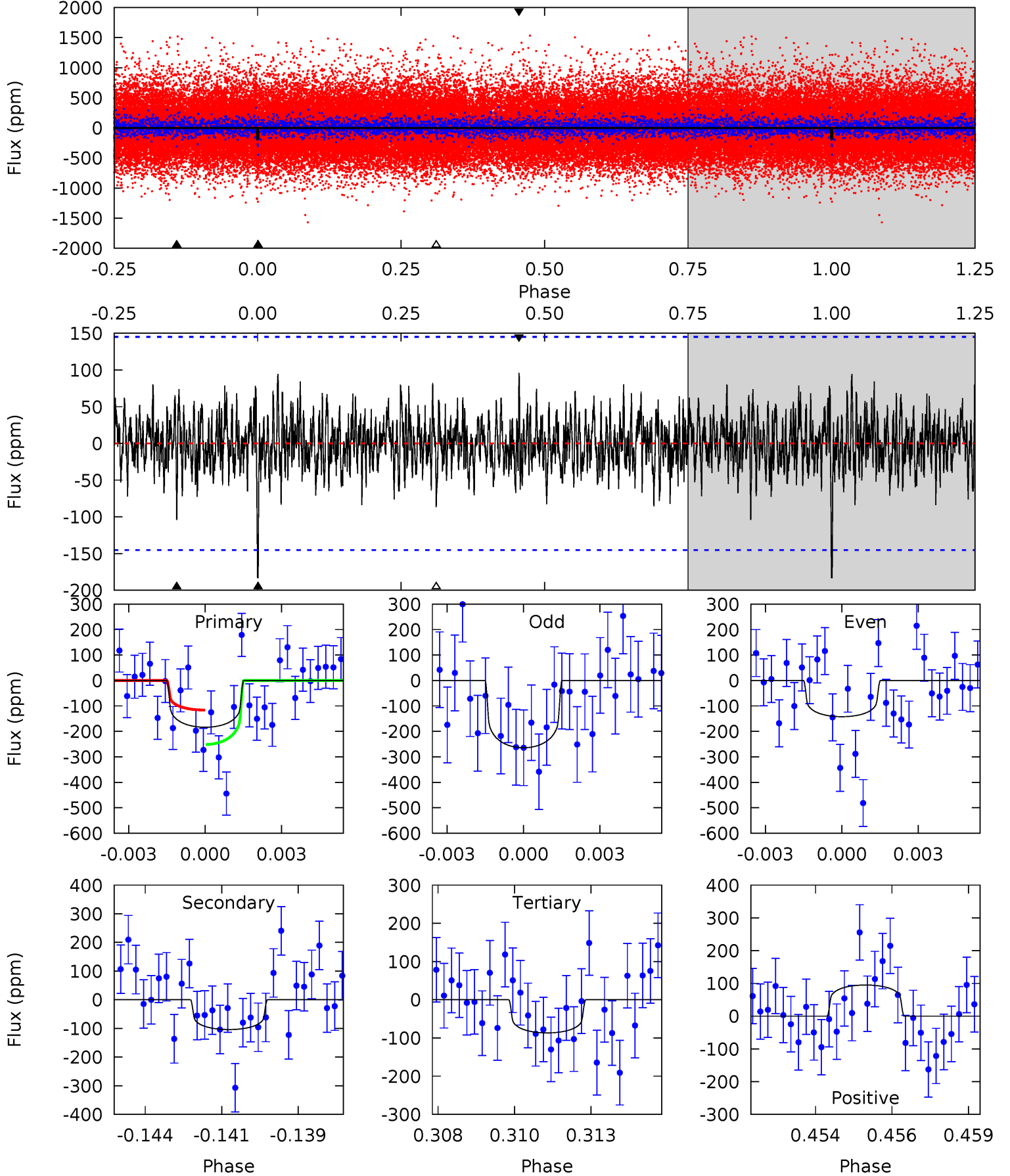
TCE 007515103-01 P=216.161545 Days  $T_0=208.913471$  (BKJD)



# DV Model-Shift Uniqueness Test

007515103-01, P = 216.193703 Days, E = 208.849022 Days

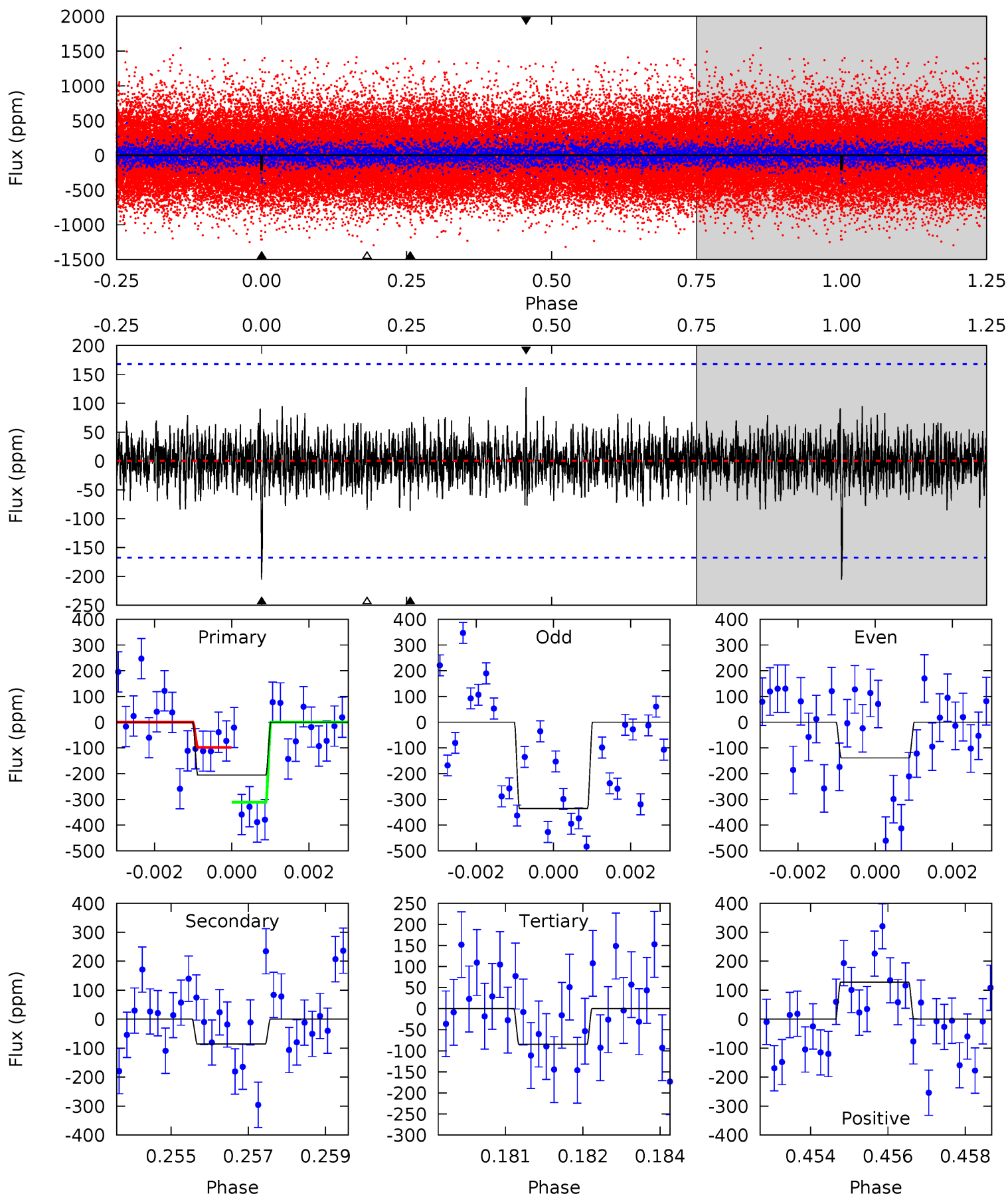
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.68	3.78	3.16	3.46	5.28	3.02	1.06	3.53	3.23	0.63	0.33	2.13	1.53	0.34	2.46



# Alt Model-Shift Uniqueness Test

007515103-01, P = 216.161545 Days, E = 208.913471 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
6.54	2.73	2.70	4.06	5.34	3.11	0.86	3.84	2.48	0.04	-1.32	2.99	1.55	0.38	3.39



### Stellar Parameters For KIC 007515103

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6086^{+181}_{-200}$	$4.511^{+0.040}_{-0.216}$	$-0.260^{+0.300}_{-0.300}$	$0.921^{+0.289}_{-0.096}$	$1.003^{+0.139}_{-0.125}$	$1.808^{+0.400}_{-0.998}$
	+3%/-3%	+1%/-5%	+115%/-115%	+31%/-10%	+14%/-12%	+22%/-55%
Source	PHO1	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 007515103-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-104 \pm 27$	$1.70^{+1.35}_{-1.04}$	$442^{+32}_{-22}$	$4935^{+2924}_{-989}$	$9323^{+54160}_{-6483}$
Alt.	$-86 \pm 31$	$1.90^{+1.44}_{-1.15}$	$441^{+33}_{-20}$	$4486^{+2612}_{-892}$	$5930^{+34255}_{-4288}$

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

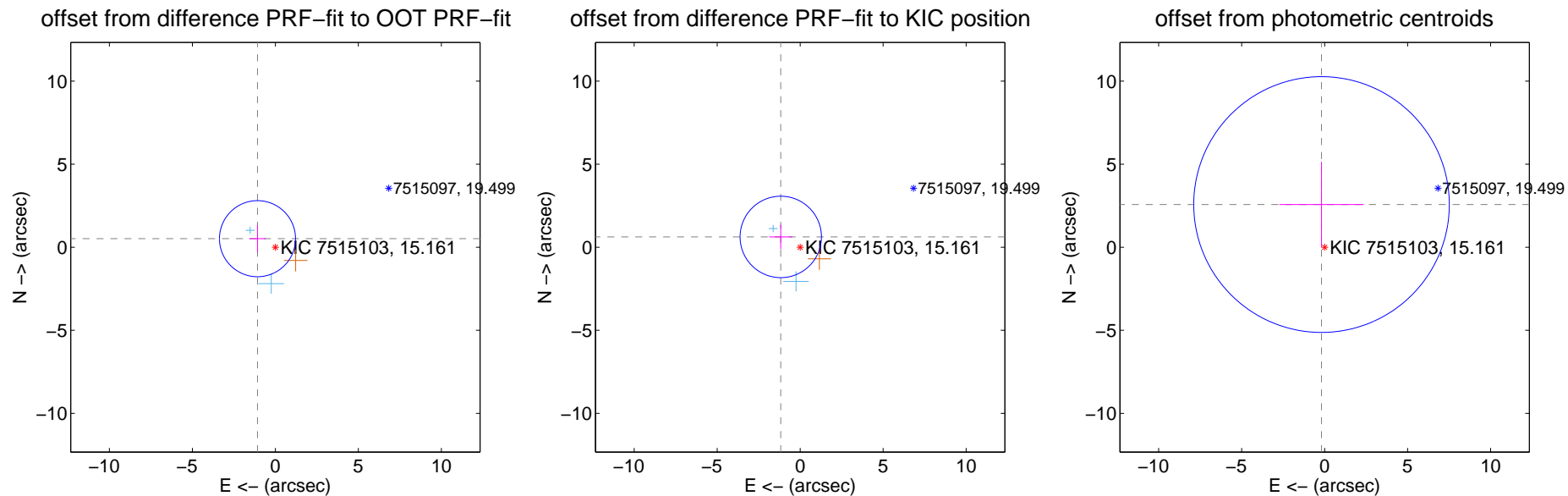
## DV Centroid Data

Supplemental centroid analysis for 007515103-01. Kepler magnitude: 15.16. Transit SNR 5.54

There are 2 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.15 arcsec

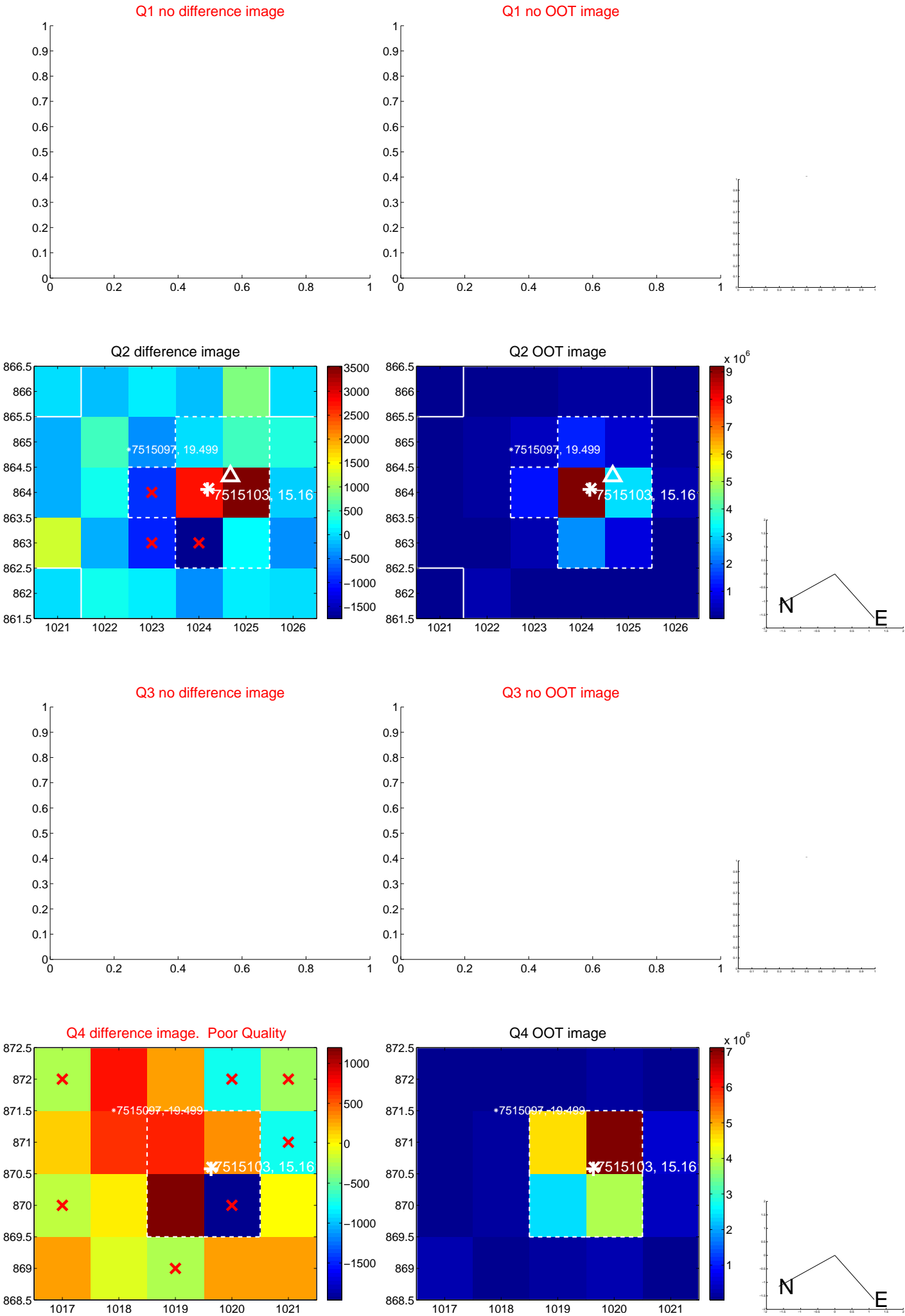
	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.193 \pm 0.763$	1.56	$1.077 \pm 0.500$	$0.514 \pm 0.814$
PRF-fit source offset from KIC position	$1.323 \pm 0.817$	1.62	$1.168 \pm 0.700$	$0.621 \pm 0.743$
photometric centroid source offset	$2.58 \pm 2.57$	1.00	$0.19 \pm 2.54$	$2.57 \pm 2.57$



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.

Q5 no difference image



Q5 no OOT image



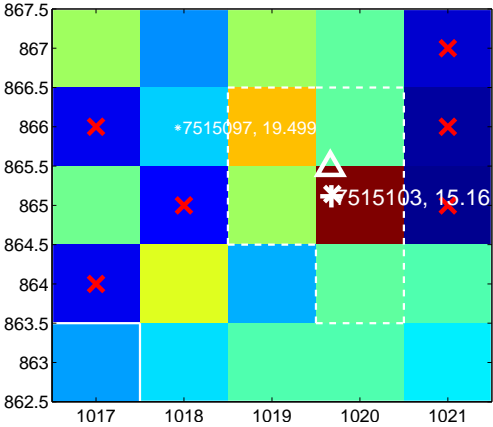
Q6 no difference image



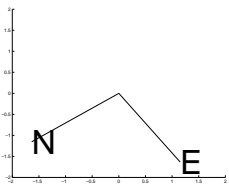
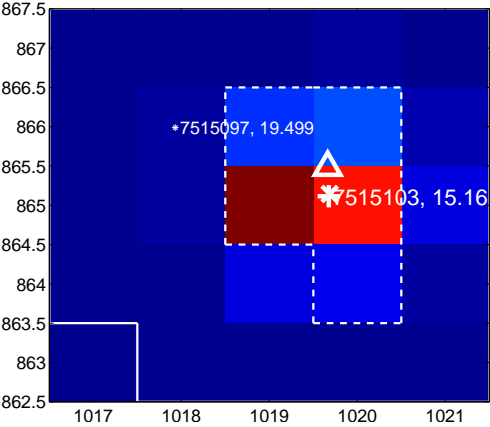
Q6 no OOT image



Q7 difference image. Poor Quality



Q7 OOT image



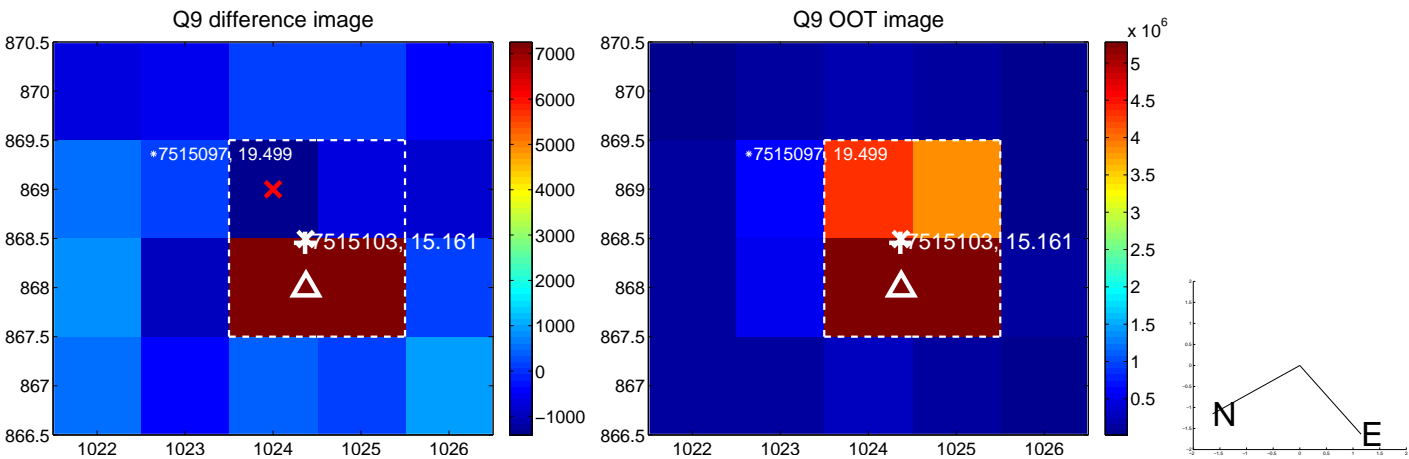
Q8 no difference image



Q8 no OOT image



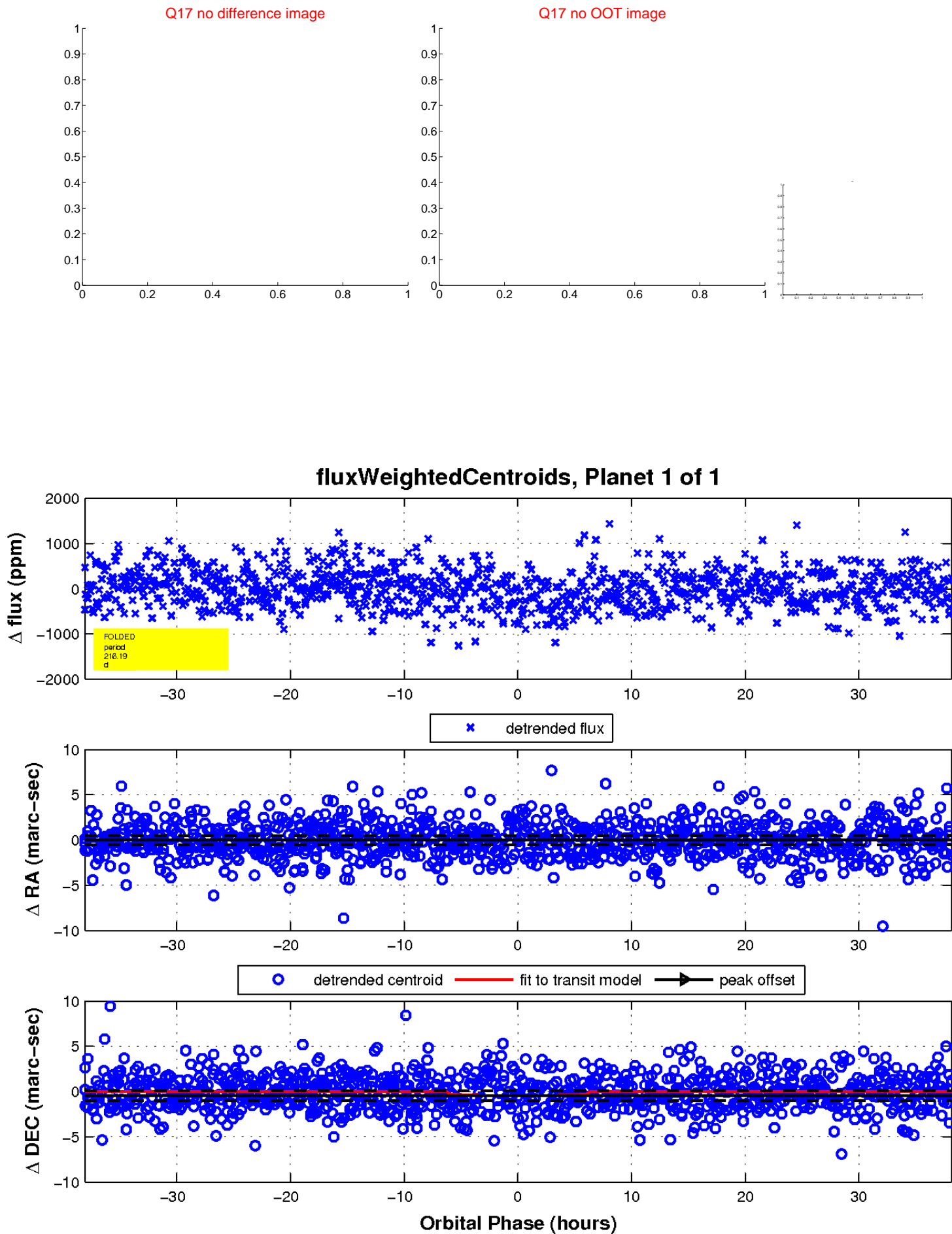
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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.



UKIRT Image

Declination

